BUT, WHY? AN INQUIRY INTO VOLUNTEER MOTIVATION IN COASTAL HABITAT RESTORATION

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ABSTRACT

Motivational drivers related to volunteer activity are virtually limitless. This study represents an investigation to uncover which motivational drivers engaged volunteers in coastal habitat restoration activities offered by Tampa Bay Watch. Is the primary motivation social? Does it connote environmental stewardship? Could they be psychological? Or do they arise from a larger sense of civic duty? Which drivers are most frequent among volunteers, and are the drivers generally intrinsic, extrinsic, or some combination? Understanding these motivational drivers is useful for organizations that promote habitat restoration as well as for those organizations that provide funding for such endeavors. Qualitative and quantitative techniques were used to assess volunteer motivation. Results indicate that environmental stewardship and civic duty are the most important factors in volunteer motivation.

DEDICATION

For my parents – God bless you for moving to the country! You afforded me the opportunity to grow up spending many a day lost in the wonder of the natural world.

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The following is just one small slice of what I learned.

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ABBREVIATIONS

Community-based Restoration Program ..... CRP
Florida Department of Environmental Protection .....FLDEP
National Oceanic and Atmospheric Administration Program .....NOAA
Office of Management and Budget ..... OMB
Restore America's Estuaries..... RAE
Restoration Center .....RC or NOAA RC
Tampa Bay Watch ..... TBW
Tampa Electric Company..... TECO
United States Geological Survey..... USGS

1.0 How did I get into this?

It's Earth Day, 22 April 2005. Six staffers from the National Oceanic and Atmospheric Administration (NOAA) and I pack up a few small items at the St. Petersburg office and hop aboard a small power boat. The weather is picture perfect – blue skies, a few drifting clouds, and temperatures in the mid-seventies. They call this work?! Dressed in shirts, shorts, and our requisite life jackets, we skip across Tampa Bay. The water is like glass this morning – beautiful.

Our destination is Williams Park. It is on the far side of the Bay. As we head there, I see other power boats out for a day on the water, a handful of sail boats, and what appear to be a few charter fishing boats. We cross over the ship channel and, in the distance, I spot a large commercial shipping vessel. Tom, one of my colleagues, tells me Tampa is not only a big commerce port but a hub for cruise ships as well. This Bay is busy! Little wonder then, that our mission for the day is a necessary one. We are on our way to join a band of dedicated volunteers in the restoration of an oyster reef at Whiskey Stump Key.

As we sidle up to the dock, the Park's boat ramp is already a flurry of activity. The Boy Scouts are here today, along with staff from Tampa Electric Company (TECO), all coordinated by the non-profit environmental organization, Tampa Bay Watch (TBW). The sixty-plus volunteers of all ages are busy shoveling oyster shell into mesh bags. They are laughing, chatting, and working hard.

I have never seen so much oyster shell in one place (Figure 1). They tell me we have more than 20 tons of it on site. Amazing! As bags are filled, the scouts and their leaders load them onto boats for transport over to Whiskey Stump Key. We debark our NOAA boat, introduce ourselves, and get to work scooping up shovels, filling bags, and tossing them onto waiting vessels.

When we have enough bags to make the five-mile run to the Key, a little more than half the volunteers pile onto boats for the trip. I hop aboard a small boat – just enough room for two of us and about a dozen bags.

Figure 1 Twenty-plus tons of oyster shell for Whiskey Stump Key. (USGS, 2005)

I sink down into the hull and help balance out the weight with the shell as we putter down the inlet out to the Bay. Long story short, we get a little mixed up and take the long way around to the Key! I don't mind however, as the weather is glorious, we get to see more of the Bay, and my fellow volunteer is great company.

We skip past a few islands which my "captain" tells me are man-made shoals. They are covered with low vegetation and large white birds – likely egrets. I ask the captain if he enjoys birding and he says "Yes, and kayaking, too!" He tells me about how he has been coming to Tampa Bay for years.

When the captain retired, he moved here permanently and joined the local chapter of the Audubon Society. He enjoys spending his days on the water, occasionally fishing, but often just kayaking, taking in the natural world. His deep appreciation for this environment is evident in his stories. I begin to wonder how often he volunteers with TBW.

The captain knows a good bit about pollution issues in Tampa Bay, too. It suffers ailments similar to those of many bays around the country – nutrient loading, an oil spill [that impacted the lower part of Tampa Bay (FLDEP and NOAA, 2000)], and inputs from processing plants that sit alongside the Bay. The captain voices a strong commitment to conserving the Bay environment. He wants to ensure that it is a safe place to bring his family for recreation and relaxation. He heard about this restoration day through the Audubon Society's involvement in the project and came see what it was all about.

Given his level of awareness, I am surprised to discover this is his first volunteer experience with TBW.

Figure 2 Volunteers place bagged oyster shell in the waters around Whiskey Stump Key. Photo, NOAA.

We finally wind our way back to the Key and rejoin our comrades in restoration (Figure 2). They've all but emptied the other boats, so we are just in time to bring them a fresh supply of bagged oyster shell. We heave the bags over the side to volunteers wading knee-deep and higher in the water. They place the bags in rows along the edge of the shore. The hope is that the abundant natural oyster spat in the Bay will settle on these bagged oysters and grow into a new reef.

The new reef will protect the Key from erosion. This side of the island suffers from near-constant wave-battering. The shipping channel is close by and wave energy from the large ships can be strong at times. Due to losses of historic oyster reefs in the area, the wave energy is carried from the channel straight into this Key, taking its toll on the island's shoreline.

Once all the bags are in the water, we pile back on to boats and return to the park. At this point, we've been laboring for nearly four hours. The TBW volunteer coordinator tells everyone it's time for lunch! The catered lunch (courtesy of TECO) is a welcome part of the volunteers' experience.

Tampa Bay Watch staff take time during lunch to acknowledge their appreciation for the volunteers' hard work. They recognize, in particular, the work of soon-to-be Eagle Scout, Rob Parris, who developed the plan for the weekend's activities. Rob wanted to complete a project to benefit the Bay because he enjoys all the recreational opportuni-

ties it offers and cares "a lot about keeping the water clean" (Smith, 2005). Rob learned about the activities of NOAA's Restoration Center, and with help from NOAA and TBW personnel, he organized and executed the oyster reef restoration project.

1.1 The Volunteer

A volunteer is a person who believes that people can make a difference - and is willing to prove it.
--Anonymous

Volunteers like Rob and the others who gave their time on Tampa Bay this past Earth Day are critical to the success of ecological restoration activities. They provide the human capital that we need in order to accomplish measurable positive change in the environment. In 1993, volunteers throughout the United States provided an estimated 19.5 billion hours of work across all service areas (McCurley, 1996).

The value of the work those volunteers provide is virtually priceless. Volunteer service saves organizations tens of thousands of dollars or more over the course of a year. One estimate placed the total value of volunteer service in 1993 at $182 billion (McCurley, 1996).

Unfortunately, statistics indicate that volunteers may be harder to find in future years. The overall trend in volunteering is one of steady decline (McCurley, 1996). Some research attributes this decline to such things as the aging "Baby Boomer" population (Volunteer Canada, 2001). Others attribute the decline to changes in lifestyle. For example, urban sprawl has created a commuter society, which leaves fewer hours in the week to donate to volunteer service (Putnam, 2000).

I contemplate this prospect as I sit and lunch with the other volunteers. I begin to wonder – what really brought them here today? What motivates them to get out in the field, shovel shell for hours on end, and then wade in Bay waters just to place shell

along a shoreline in the hopes that it will one day become a reef? That takes a lot of effort! Why do they do it?

Is it social – like the volunteers from TECO – could they simply enjoy spending time with coworkers? Maybe it is extrinsic – like my "captain" – they want to improve the ecological health of the Bay so they can safely fish for food. Perhaps it is more intrinsic than that, i.e., evidence of environmental stewardship like Eagle Scout Rob Parris' sense of caring for the natural world. Maybe it is purely a physical outlet – they grabbed the opportunity to get out of school or work, experience the glorious weather, and enjoy a day on Tampa Bay! Whatever the reason, I was intrigued and determined to discover more about it.

1.2 Putting the Pieces Together

I returned to work in Silver Spring, Maryland, with my interest in volunteer motivation ignited. I wondered if I could somehow pair my professional obligations with my academic goals. At lunch the following week, I mentioned to a colleague my interest in volunteer motivation. He commented to me that a small group of researchers in our division, the NOAA Restoration Center, was working on the human dimensions of natural resources, which may be related to this idea of stewardship and volunteer motivation. He encouraged me to investigate. I did.

1.2.1 NOAA and the Community-based Restoration Program

In 1996, NOAA launched a brand new habitat restoration initiative, the Community-based Restoration Program (CRP). The program provides funding and technical assistance to organizations engaging in hands-on, on-the-ground habitat restoration projects that benefit fish resources. NOAA's CRP was founded with a mere $250,000. In less than ten years, it grew to be a multi-million dollar program.

Within the first ten years, NOAA's CRP funded more than 1000 projects in 26 states, Canada, and the Caribbean. To date, the program and its partners have restored 24,000 acres of productive habitat, removed 80 fish passage barriers, and opened 900 steam miles for diadromous fish passage (RCDB, 2006). These metrics are fundamental to assessing and reporting CRP's success. However, one could argue that, as important as these ecological achievements are, the community-based program promulgates something equally important – an environmental stewardship ethic – by offering volunteers an outlet through which they can exhibit their commitment to the environment.

The Restoration Center (RC), home to the community-based program within NOAA, states clearly that its mission is achieved, in part, through "Fostering habitat stewardship and a conservation ethic" (NOAA RC, 2006). NOAA's CRP supports restoration projects that are frequently completed through the diligent work of volunteers. These volunteers are recruited through locally-based partner organizations like Tampa Bay Watch and others. Through volunteer recruitment, these organizations touch the lives of thousands of individuals over the course of any given year. But what is it about these restoration day activities that draws volunteers to participate?

1.1.2 Ask and You Shall Receive

I struck up a conversation with Perry Gayaldo, our Chief Scientist at the NOAA Restoration Center. I explained my interest and inquired about opportunities in his research program which would allow me to combine work and school. His response – "I have the perfect project!" Restore America's Estuaries (RAE) had expressed an interest in researching the impact of community-based habitat restoration on a citizen's environmental stewardship ethic. They wanted to kick off a study, and present initial findings at their December 2006 conference in New Orleans. Perry promptly put me in touch with RAE and we began coordinating activities.

In mid-October 2005, we convened a meeting among a small group of community-based restoration practitioners and a number of social scientists to discuss environ-

mental stewardship ethic and how RAE might go about assessing community-based activities' impact on it. After eight hours of intense dialog and brainstorming, we completed a working definition of environmental stewardship ethic, developed some hypotheses, narrowed the data field RAE wanted to examine, and decided to research environmental stewardship through three social science methodologies: a written questionnaire, interviews, and observation. Everyone agreed that the best course of action was to gather data at a restoration event with follow-up interviews and/or panel discussions with volunteers.

Our interdisciplinary team designed a questionnaire to help all parties assess attitudes, motivations, behaviors, and barriers to behavior relative to coastal habitat restoration and protection. For the purposes of this paper, I chose to examine one small part of the data set – volunteer motivation(s). In particular, I focused on the motivations of two volunteer groups within Tampa Bay Watch (TBW): participants in a scheduled restoration activity and members of the TBW Board of Directors. While both groups are volunteer-based, I expected that what motivates one group may differ slightly from what motivates the other.

2.0 About Tampa Bay Watch

After our kick-off meeting in October, I approached Wendy Valle and Honey Rand, both of whom are working on TBW's contribution to the RAE study. I asked to be a part of the Tampa Bay area study in order to facilitate my academic pursuits. Both agreed that my support would be beneficial; so, I learned a little more about TBW as an organization and its current volunteer base.

Tampa Bay Watch, founded in 1993, is a non-profit organization dedicated to preserving the ecology of Tampa Bay, the largest estuary in Florida. By raising awareness and

fostering environmental stewardship, the 1000+ member organization seeks to "provide effective long-term improvements to the bay, and empower our community with the knowledge to counteract our environmental problems" (TBW, 2005). To this end, the organization relies heavily on local volunteers to carry out coastal habitat restoration and protection activities in and around Tampa Bay. On average, TBW engages between 40 and 70 volunteers per event.

The organization maintains a 12-member, all-volunteer Board of Directors. Membership is diverse, including professionals in transportation, law, public relations, real estate, medicine, recreational fishing, recycling, media, restaurant business, investments, and insurance. These personnel serve TBW by guiding its business plans, policy objectives, and overall mission. They promote the activities and mission of TBW in the pubic eye. All of the Board members participate in the organization's restoration events; however, the frequency of participation varies greatly.

Members of the Board of Directors are by no means the extent of volunteers upon whom TBW relies to accomplish its mission. Tampa Bay Watch actively recruits volunteers year-round for projects of all scales and habitat types. Volunteers support monitoring activities, educate other citizens, and dedicate significant hours of labor to coastal habitat restoration projects, including reconstructing oyster reefs and seagrass beds, cleaning shorelines, and protecting wildlife. The organization sponsors a host of programs through which community volunteers can assist in improving the ecological health of Tampa Bay.

The composition of TBW's volunteers is broad, encompassing people who reside only feet from sites where projects are completed to those who live miles away. The organization provides volunteer opportunities to all ages, from grammar school children to senior citizens. Some opportunities are more labor-intensive than others. This design – year-round activity, various levels of physical involvement, multiple restoration locations

and project types – allows volunteers to find their niche while effectively meeting TBW's goals to raise community awareness and empower citizens.

Through the RAE study, TBW will be able to develop a deeper understanding of its volunteers' motivation(s). This, in turn, will help TBW shape messaging and volunteer experiences, and may also aid volunteer recruitment strategies. For example, if we discover that volunteers participate largely due to social reasons, then TBW may increase participation in coastal habitat restoration events by targeting social organizations like a nearby fraternity or sorority, with an emphasis on the personal interactions associated with a habitat restoration experience. If, on the other hand, volunteers are largely motivated by a desire to improve ecological health, TBW might consider expanding its collaboration with other area organizations involved in environmental issues, e.g., gardening clubs or the Humane Society. Before achieving any of this, however, we first need to assess what motivates TBW volunteers.

3.0 MOTIVATION, MOTIVATION, MOTIVATION

Although NOAA just began addressing environmental stewardship in recent years, as I discovered via a literature review, the field itself is not at all nascent. In the late 1970s and early 1980s, environmental stewardship was a hot research topic. Likewise, inquiries into motivation have been conducted since the early days of psychology and sociology. A review of literature on the general impetus behind motivation, specific motivations for environmental stewardship activities, volunteerism in hands-on restoration, and general trends in environmental behavior(s) revealed some interesting findings.

3.1 INTRINSIC AND EXTRINSIC

Research into the underpinnings of motivation is largely contained to the field of psychology. However, the implications of this research can be brought to bear on a number of disciplines outside that field, environmental activism being but one. Two aspects

of motivation, intrinsic and extrinsic, have been the focus of much research over the years. Intrinsic motivation is defined as "the motivation or desire to do something based on the enjoyment of the behavior itself rather than relying on or requiring external reinforcement" whereas extrinsic motivation is defined as "the desire or push to perform a certain behavior based on the potential external rewards that may be received as a result." (AllPsych, 2006).

Intrinsic motivational drivers provide strong incentives for behavior. Tapping these motivational cues would benefit such arenas as environmental management and policy which typically focus on extrinsic factors, e.g., market incentives, to change behavior. Although intrinsic motivation is generally not accepted as significantly relevant to policy and management in the environmental arena (Gawel, 1999), it is, I believe, of paramount importance when discussing volunteer motivation.

According to a synthesis of studies by researchers Ryan and Deci (2000), motivation (intrinsic and extrinsic) relies heavily on the needs for autonomy, competence, and relatedness. Situations in which individuals can experience all three components are very likely to produce a sense of satisfaction and accomplishment. This, in turn, bolsters the motivational driver which, in turn, is expressed in behaviors, e.g., responsible environmental behavior.

Freitas and Higgins (2002) completed a study, which revealed that eagerness-related actions, e.g., those driven by intrinsic motivation, are linked favorably to a person's ideal definition of self whereas vigilance-related actions, e.g., those driven by extrinsic motivation, are linked favorably to a person's definition of self relative to their sense of responsibility or obligation. Subjects who were primed with eagerness-related language derived more enjoyment from intrinsic motivational tasks while those primed by vigilance-related language derived more satisfaction from extrinsic motivational tasks.

The implications of Freitas and Higgins' (2002) studies are that overall enjoyment of an experience is enhanced under conditions related to an individual's priming for the task. This has application within environmental activism as it relates to the volunteer experience: how individuals are language-primed at a volunteer site to respond to the day's activities and/or how they have been language-primed prior to arriving on site.

I found that volunteer motivation, as depicted in environmental literature (see references in the following subsections), often focuses on distinct factors for motivation that can be linked to these overarching concepts of intrinsic or extrinsic motivation. As I anticipated, research in this field indicates that motivation for volunteer involvement ranges widely from providing psychological benefits to allowing an individual to express a learned sense of environmental stewardship to assisting citizens in meeting their sense of civic duty to meeting social needs. These four categories of motivational factors (psychological, environmental stewardship, civic duty, social) are common throughout the literature although the number of distinct factors is ostensibly infinite (Grese, 2000).

3.2 Psychological

My literature review revealed that limited research has been conducted to assess the psychological motivations specifically linked to volunteering in habitat restoration activities. Psychological motivation can include such derivations as the benefits of physical activity outdoors as well as the opportunity to learn. Both of these forms of psychological motivation align with Ryan and Deci's (2000) definition of intrinsic motivation.

One study of habitat restoration volunteerism conducted at the University of Illinois at Urbana-Champaign categorizes the psychological factors of the experience as opportunities to: be away, take meaningful action, participate in an experience, achieve personal growth, engage in physical activity, and indulge a fascination for nature (Miles, 1998). These motivations were all assessed via the level of satisfaction they produced.

The highest sources of satisfaction were meaningful action and fascination with nature. These two elements align with Ryan and Deci's (2000) identified motivational needs of autonomy (satisfaction) and competence (fascination/learning).

A University of Michigan study surveyed volunteers in an Adopt-a-Stream program, a natural areas parks department, and a state chapter for a national conservation organization (Ryan, 2001). The results revealed that "helping the environment" and "learning" were the top two motivational drivers supporting volunteerism, factors strongly linked to Ryan and Deci's (2000) definition of intrinsic motivation.

3.3 Life Paths to Environmental Sensitivity and Stewardship

Social science researchers have conducted myriad studies of the life paths that foster two ostensibly intrinsic motivations for volunteer activity – environmental sensitivity (awareness of environmental issues) and environmental stewardship (awareness activated). In 1980, Thomas Tanner published one of the seminal papers in this research area by defining a set of life experiences common to several prominent conservationists and environmental educators.

Tanner conducted two studies (Tanner, 1980). The first examined biographies and autobiographies recounting life experiences that led to a life in conservation. In the second, Tanner completed a survey of several prominent environmental organizations evaluating the life paths of "informed citizen activists." Recipients were asked to write about the impact of life experiences on their decision to become active in environmental causes.

Tanner's results indicate that the leading factor in developing environmental sensitivity (as later defined by Peterson, 1982) and environmental stewardship (intrinsic motivations) was a significant amount of time spent outdoors in childhood, with a strong sub-

set that conveyed a connection to habitat. Parental influence was the third most significant factor (arguably extrinsic or intrinsic motivation).

A wealth of similar studies followed Tanner's work through the 1980s and 1990s. Two recent reviews, published by Chawla (1998, 1999), summarize the results of nearly two dozen other research studies assessing the impacts of life paths. Chawla (1998) discussed the similarities and differences among studies assessing the development of environmental sensitivity. She noted that the studies she summarized were not always consistent in defining parameters, e.g., what constitutes an outdoor experience? Caveats aside, like Tanner's findings, Chawla's survey (1998), along with her own study of environmental activity in Kentucky and Norway (1999), strongly indicate that time spent outdoors was the most influential factor leading to the intrinsic motivations of environmental sensitivity and environmental action (stewardship). The influence of family ranked highly in four out of eight sensitivity studies (1998) as well as in Chawla's study of environmental action (1999).

The Chesapeake Bay Foundation (CBF), a non-profit organization, conducted a survey among its volunteers which revealed that "hands-on activities with a direct impact on the environment" was the overwhelming reason for enjoying a volunteer event (Innovation Network, 2002). This was followed closely by opportunities to interact with others and learn about the Bay. These sources of satisfaction correspond with the aforementioned results noted in life path studies – engaging in environmental action and an experiential connection with nature. While the overarching form of motivation is not described (extrinsic/intrinsic), this motivation (hands-on activity) seems to indicate that the CBF program is meeting three of the needs addressed in Ryan and Deci's (2000) definition of motivation – autonomy (hands-on activity), relatedness (opportunities to interact with others), and competency (learning about the Bay).

3.4 Civic Duty

Another important form of intrinsic motivation that I discovered may be defined as one's sense of civic duty. Professor Simon Rogerson defines a chief principle of civic duty as "uphold[ing] the health, safety and welfare of wider society, future generations and the environment" (Rogerson, 2001).

Schroeder's assessment of volunteer activities in the upper mid-West revealed that motivations align with this application of civic duty. Volunteers noted "the sense of urgency and immediacy," "belief that they can make an important and real difference," and "the ability to see tangible progress" as the top three motivating factors for volunteer activity (Schroeder, 2000). Similarly, Donald's (1997) work in Canada indicated that volunteers engaged in restoration activities near Toronto cited "ideological reasons" and "helping reasons" as the two most important factors for getting started and for continuing their work with the Task Force to Bring Back the Don, "a volunteer environmental stewardship group with a mandate to restore a severely polluted and degraded watershed to a clean, green and accessible one."

3.5 Social

In addition to these three distinct motivational drivers for volunteering, I offer one last, but potentially significant distinct motivational driver for volunteering – a social driver. Consistently active volunteers noted that friendships formed through the Task Force to Bring Back the Don were important in their persistent desire to volunteer (Donald, 1997). Similarly, Martinez conducted a survey of Appalachian Trail volunteers which indicated that efficacy ("the ability of the individual to help in protecting the AT") and social networks were the two strongest indicators of volunteers' commitment to active volunteering (Martinez, 2004). The social aspect of motivation may be extrinsic or intrinsic depending on the context; however, it meets the overall motivational need of relatedness as defined by Ryan and Deci (2000).

3.6 Summary Implications

As motivational factors relate to activities at TBW, each distinct motivating factor (psychological, environmental stewardship, civic duty, and social) can lend direction to TBW's recruiting strategies (See "So What?"). The overarching archetypes of motivation (intrinsic and extrinsic) will be useful in TBW's strategic planning process, i.e., directing growth in the direction of formal education activities. Additionally, addressing the issue of language priming via recruitment tactics and on-site introductions/orientations may improve the overall volunteer experience.

4.0 I HAVE A HUNCH...

In our October 2005 kickoff meeting, our interdisciplinary team made certain assumptions about citizens engaged in volunteer-based restoration projects. Locally-based organizations like TBW provide powerful and effective opportunities through which individuals can express and exercise their commitment to improving the natural environment. We assume that most volunteers, like those in Tampa, arrive on site with some predisposition toward improving the natural environment. Even those who may be extrinsically motivated (on site to fulfill community service hours) still have to choose this particular activity to complete their service, which still leaves the question open – what brings these volunteers to a restoration event? Why do they elect to spend a day getting sweaty, sandy, muddy, and wet in an attempt to improve the environment?

I expect that volunteers engaged in TBW restoration events will express both extrinsic and intrinsic motivational drivers for taking action. I expect the distinct motivational factors will be similar to four that are illuminated in other research studies, e.g., psychological, environmental stewardship, civic duty, or social. I expect that the most significant motivational driver among restoration day volunteers will be one related to environmental stewardship and that the social driver "To be with friends" will be significant.

I also expect that members of the Tampa Bay Watch Board of Directors will be less influenced by the social driver ("To be with friends") and that civic duty will be their most significant motivational factor. This hypothesis is based on the difference between the level of commitment for a restoration day volunteer and a Board member. Volunteer-based restoration events are sporadic, allowing volunteers to participate anywhere from one to several dozen times per year. However, membership on the Board of Directors requires regular participation in meetings and the like which may indicate a different level or different type of commitment, and, therefore, either a different set of motivational factors or a different ranking among said factors.

With all these assumptions and expectations in mind, we finally set about trying to answer the question: What motivates Tampa Bay area volunteers to get involved in coastal habitat restoration?

5.0 HOW'D THEY DO THAT?

I investigated the motivations of two groups within Tampa Bay Watch – volunteers at a restoration day event and volunteers on the TBW Board of Directors who were not present at the restoration day event. I employed similar tools to assess each group's motivations, gathering some quantitative data and a significant amount of qualitative data.

I used chi square analysis to look for associations within the quantitative data set: individual motivational statements and the independent variables of age, gender, and level of education. I also examined the standard deviation and variance across motivational statements and independent variables. I explored narrative and observational data for evidence of support for or arguments against the quantitative data we gathered.

5.1 Restoration Event Participants

Our interdisciplinary team developed three survey tools: a multi-page questionnaire (Appendix A), a general list of narrative questions (Appendix B), and a general methodology for obtaining data through observation (Appendix C). We planned to employ all three methods during at least one restoration event per participating partner group.

Tampa Bay Watch chose to gather data during several restoration events through early spring 2006. The results herein reflect data gathered during the first event (10-11 February).

Our project work site was near the entrance to campgrounds in Fort De Soto Park, a County-owned park in Pinellas County, Florida, renowned for its beaches. Our actual restoration sites were small, located alongside the edge of one lagoon, near a series of campsites. As a consequence, visitors to the park strolled by throughout both days' activities. Several park guests stopped to ask who we were and what we were doing.

The location offered us a fantastic opportunity to provide ad-hoc environmental education for visitors. We even recruited one park guest to become a member of TBW. The Kentucky resident stopped to ask me about the restoration project. After a brief explanation and an invitation to join us, he departed. He rejoined us at the start of the event, purchased a TBW membership, completed a questionnaire, and pitched in with the restoration activity. He even returned the second day to purchase a hat!

At 8AM on Friday, a contractor deposited 15 tons of mined fossilized shell in a parking area proximal to two lagoons in the park. Volunteers were instructed to be on site at 9AM each day, and to expect to wrap up with a catered lunch around noon. Tampa Bay Watch staff arrived at 8AM each day to set up on site, knowing that volunteers invariably begin arriving nearly half an hour before the start time.

Volunteers signed in and were directed to a second table where personnel from TBW, the Environmental PR Group, and I, informed new arrivals about the questionnaire's purpose, and invited them to complete one. We encouraged volunteers to come to us with questions, and offered to read the questionnaire to help volunteers complete it, e.g., "should you have left your reading glasses at home." We wanted to ensure that literacy would not hinder responsiveness. I noticed that one or two volunteers had others read the questionnaire to them.

While we asked volunteers to complete the questionnaire, we made it clear that it was not a conditional part of volunteer participation at the event, and that only persons over the age of 18 could be included in the sample. Throughout the course of the restoration event, I observed volunteer behavior and personnel from the Environmental PR Group solicited responses to narrative questions at random.

5.1.1 Written Questionnaire

Our multi-page questionnaire included 5-point Likert-scale statements designed to help us discern, among other things, the source of each volunteer's motivation (Appendix A, question 5). The five points were phrased as follows:

- Not at all important
- Slightly important
- Moderately important
- Very important
- Extremely important

The motivational factors associated with this 5-point scale were as follows:

- Environmental stewardship, driven by an empathic perspective on the environment (Tanner, 1980; Chawla, 1998, 1999; Myers, 2005)
  - To return a part of the coast to its proper condition
  - To improve the area for wildlife/other species
  - To prevent a larger ecological crisis

- Social reasons, driven by a need to relate to others (Donald, 1997; Ryan, 2000; Martinez, 2004)
    - To be with friends
    - To make the area more useful for other human uses

- Civic reasons, driven by the need to fulfill an obligation to the community (Schroeder, 2000; Rogerson, 2001)
    - To do something positive for future generations
    - To do the right thing

- Psychological reasons driven by a desire for personal satisfaction, (Miles, 1998; Ryan, 2001)
    - To be outdoors
    - To learn about the natural environment
    - To experience something new
    - To feel empowered to make a difference

Our questionnaire also elicited general information about attitudes, behaviors, barriers to behavior, and overall demographic information to provide the organizations involved in the study with a deeper understanding of their respective volunteer bases.

"Not everything that counts can be counted, and not everything that can be counted counts." (Sign hanging in Einstein's office at Princeton)

5.1.2 Narrative

We designed our narrative questions (Appendix B) to elicit responses that help add "color" to data from in the written questionnaires (Rand, 2006). Wording of the Likert-scale questions is structured, thereby eliminating spontaneous response. Our narrative questions offered volunteers the opportunity to describe motivations for participating in their own words, i.e., in a qualitative way. We can interpret their responses via

the existing categories (intrinsic, extrinsic, and four motivational factors) to improve our overall understanding of our volunteers' motivation(s).

Our general list of narrative questions was by no means exhaustive or limiting. It merely served as our guide for beginning a dialog with volunteers. As volunteers answered questions, surveyors expanded questioning whenever possible.

5.1.3 Observation

We gathered observational data (Appendix C) in a general sense during two days of restoration activity. We watched for behaviors such as volunteers:

- engaging each other in conversation during the event;
- exhibiting other environmentally responsible behaviors, e.g., picking up trash at the restoration site without being directed to do so;
- actively looking for tasks when not instructed to do something; or
- inquiring about the habitat, i.e., sought to learn something new during the event.

We also paid attention to whether volunteers solicited information about future events or joining the sponsoring organization. Like the narrative responses, this data adds color and context, improving our understanding of volunteers' motives for participation.

5.2 Board of Directors

5.2.1 Written Questionnaire

I slightly modified the questionnaire we developed for restoration day volunteers to solicit responses from four TBW Board members (Appendix D). I modified the motivation section to include statements that might apply directly to Board members – e.g., motivational drivers such as limited mobility which may preclude participation in a field event. I also eliminated one statement that was not directly applicable to Board members – "To be outdoors."

5.2.2 Narrative

I appended three open-ended questions to the Board's questionnaire (Appendix D) that were designed to solicit deeper, narrative responses about Board member motivations.

I emailed the questionnaire with narrative questions to the Board members on 4 February 2006, along with a letter of introduction. The Board members I contacted were recommended to me by Peter Clark, TBW Director. He informed them about the RAE project, and they offered to participate in my research. I sent them one introductory email prior to the request with the questionnaire.

I provided the questionnaire to them as a fillable .pdf. This was intended to allow the Board members to complete the form, save their responses, and return the form to me electronically; thus reducing their workload (having to print the questionnaire and complete it by hand) and avoiding any potential problems with mailing responses.

6.0 WHAT WE DISCOVERED

Although I hypothesized that factors motivating restoration event volunteers and Board members would differ, the results disproved this hunch. In fact, the top three motivational statements were exactly the same for both sets of volunteers. As such, I collapsed the data sets and present the findings herein for both groups together.

As expected, overall, our volunteers' responses revealed evidence of both intrinsic and extrinsic motivations. Although extrinsic and intrinsic elements can be found in each distinct factor, I found it difficult to make this interpretation (intrinsic or extrinsic) for responses to the written questionnaire. Our results did not indicate a strong preference for one archetype over the other according to our four motivational factors (psychological, environmental stewardship, civic duty, social). However, narrative and observational data offered room for clearer interpretation of an intrinsic or extrinsic motivation.

6.1 General demographics

Although we had hoped to collect 100 questionnaires over the two days, we gleaned only 83. We collected 37 questionnaires the first day and 46 the second day. Of the 83 responses collected, only 78 questionnaires were complete enough to be included in the data set. All four Board members queried responded within two weeks, with hand-written questionnaires (three of the four faxed responses; one was hand-delivered during the restoration event). This provided us with a total of 82 written questionnaire responses.

The gender distribution was nearly equal with 54 percent male responses and 46 percent female responses. Age distribution among volunteers was as follows (Figure 3). One respondent did not provide an answer. Of the remaining 81 volunteers (78 at the restoration event and four Board members), 43 percent were between the ages of 18 and 39; 38 percent were between the ages of 40 and 59; and the remaining 19 percent were 60 or older.

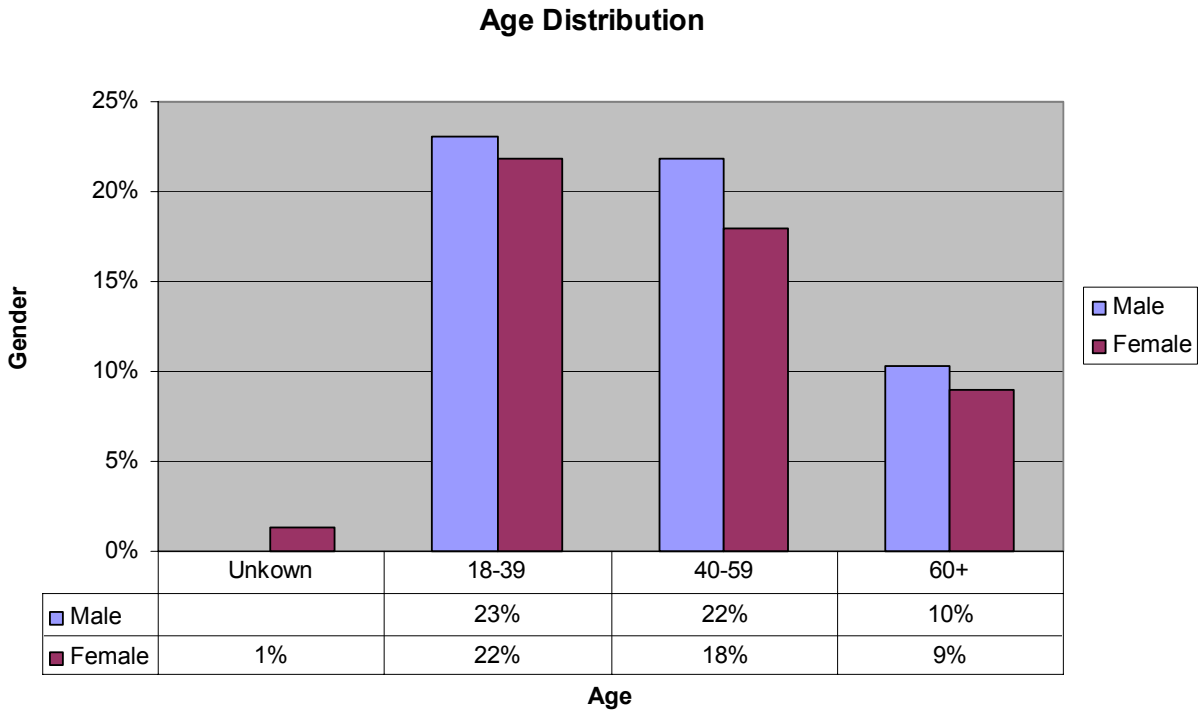


Figure 3 Age distribution across all volunteers.

The age distribution on 10 February was nearly even across all age brackets. On 11 February, we saw predominantly younger volunteers with only three over the age of 60.

The level of education among all of our volunteers revealed, in essence, a bell-shaped curve from "some college" through "post-graduate." The majority of volunteers completed college, while fewer than ten only completed some or all of high school.

6.2 Written Questionnaire Results

Across all the responses collected, most volunteers chose "very important" or "extremely important" as a response to all of our motivational prompts. Only a handful of volunteers ranked statements as "moderately," "slightly," or "not at all important." Due to this response style and the relatively small sample size, I collapsed the data set from a five-point Likert scale to three (Plyler, 2006). All twos (slightly important) were converted to ones (not at all important), and all fours (very important) were converted to fives (extremely important). Collapsing the data in this way increased the cell count to provide more robust chi-square analysis.

Our volunteers' responses revealed two strong relationships between education and both Civic Duty motivational statements (See Civic Duty). Day of the week revealed significant associations (chi square) for two motivational statements, but not for any one motivational factor overall (See Psychological and Social).

Overall, our restoration event volunteers and Board members chose the same three motivational statements as their most important reasons for volunteering:

1. To help return a part of the coast to its proper condition (environmental stewardship)
2. To do something positive for future generations (civic duty)
3. To improve the area for wildlife/other species (environmental stewardship)

As a consequence, our most highly ranked factor for motivation was environmental stewardship, followed very closely by civic duty (Figure 4).

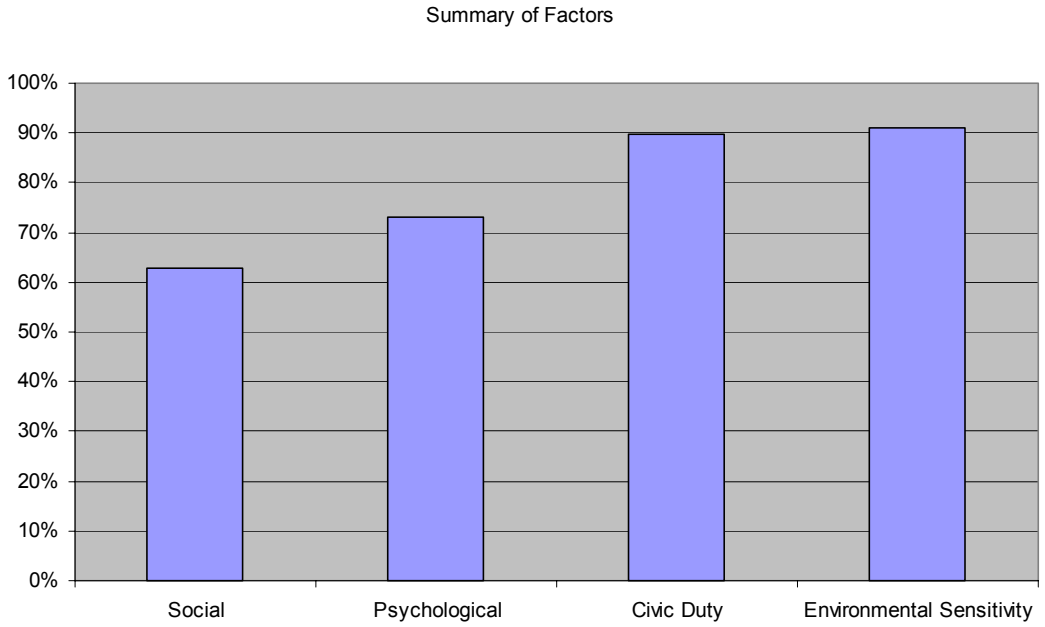


Figure 4 Summary of the four distinct motivational factors.

6.2.1 Environmental stewardship

All volunteers ranked environmental stewardship statements as important reasons for participating (Figure 5). The three environmental stewardship drivers (5c, 5d, 5h) ranked first, third, and fourth among all the motivational statements. The two statements – "To return a part of the coast to its proper condition" (5c) and "To improve the area for wildlife and other species" (5d) – garnered 91 and 85 percent of the "extremely important" responses, respectively.

The standard deviation and variance were lowest among environmental stewardship statements (Appendix E), indicating strong agreement among volunteer responses to this factor as a whole. This was true across all statements and several independent variables (age, gender, and level of education).

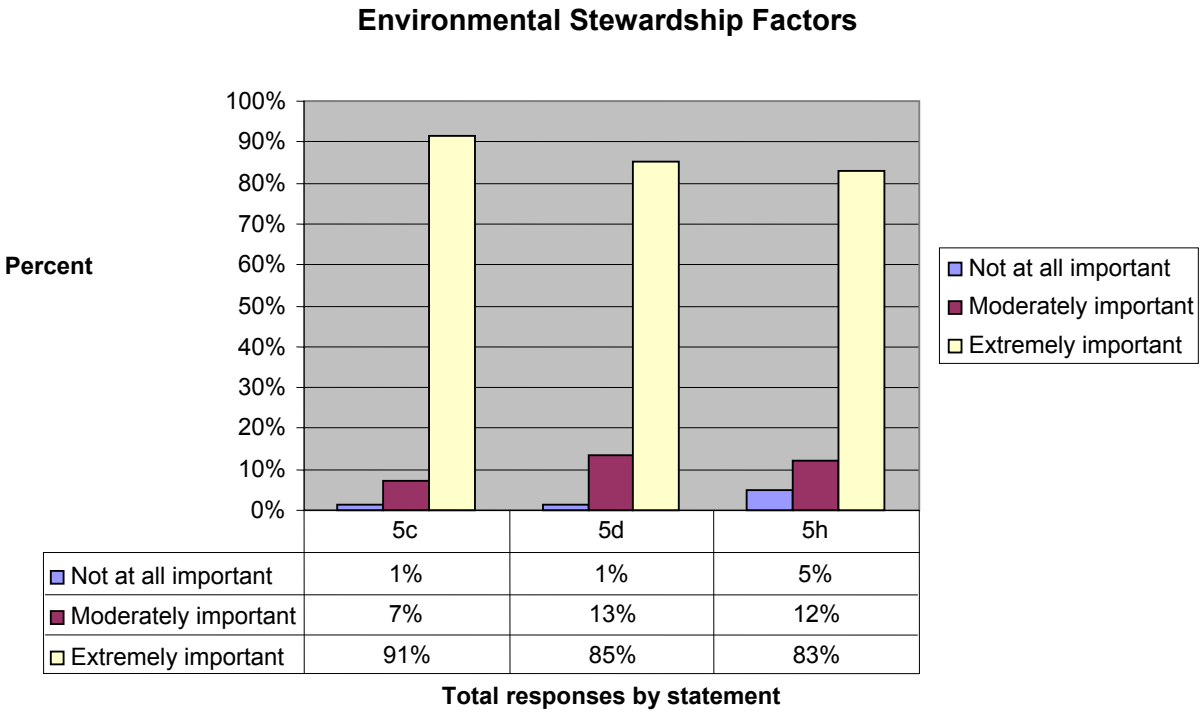
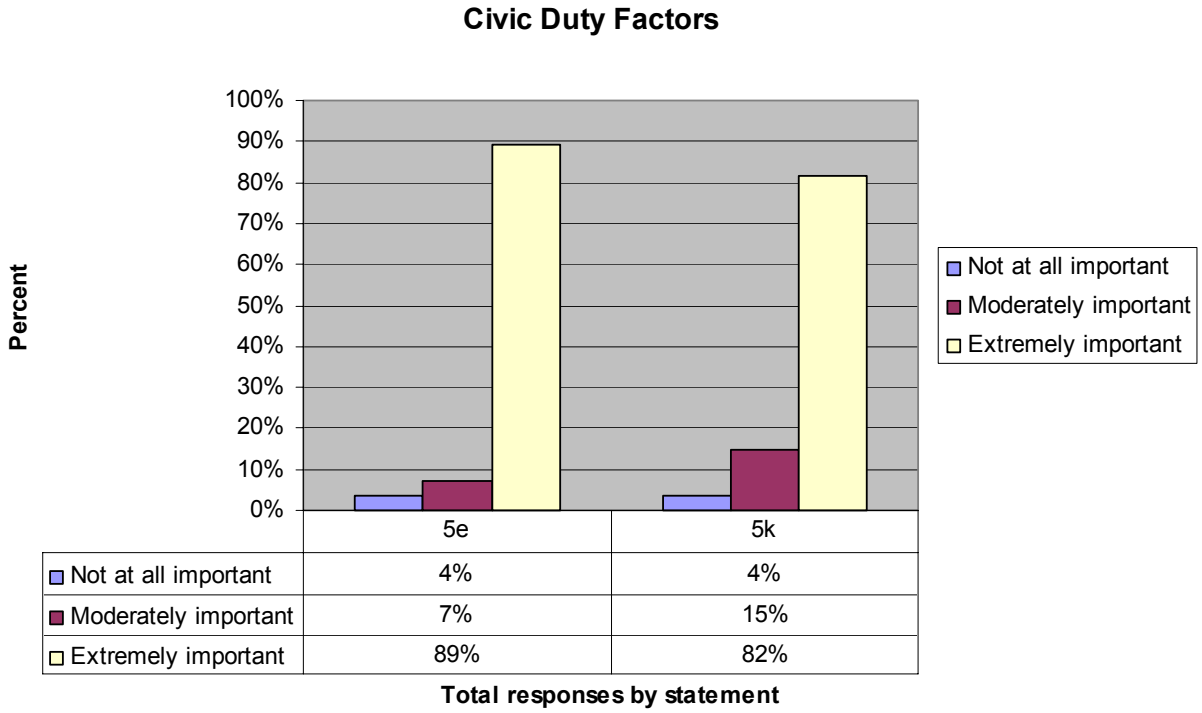


Figure 5 Environmental stewardship factors across all volunteers.

6.2.2 Civic Duty

Volunteers noted the extrinsic civic duty motivation – "To do something positive for future generations" (5e) – as the second most important motivation overall. Eighty-nine percent of those who responded to the statement chose it as "extremely important" (Figure 6). The variation and standard deviation for this statement was lowest among female respondents and those with "some college" experience (Appendix E), indicating uniformity among responses within this independent variable.

The motivational driver ["Because I have a skill set that is needed" (5n): Appendix D] that I expected to be applicable for Board member volunteerism ranked very lowly as a reason for joining the Board. Due to the noted lack of importance, this statement was not included in Figure 6.



	5e	5k
Not at all important	4%	4%
Moderately important	7%	15%
Extremely important	89%	82%

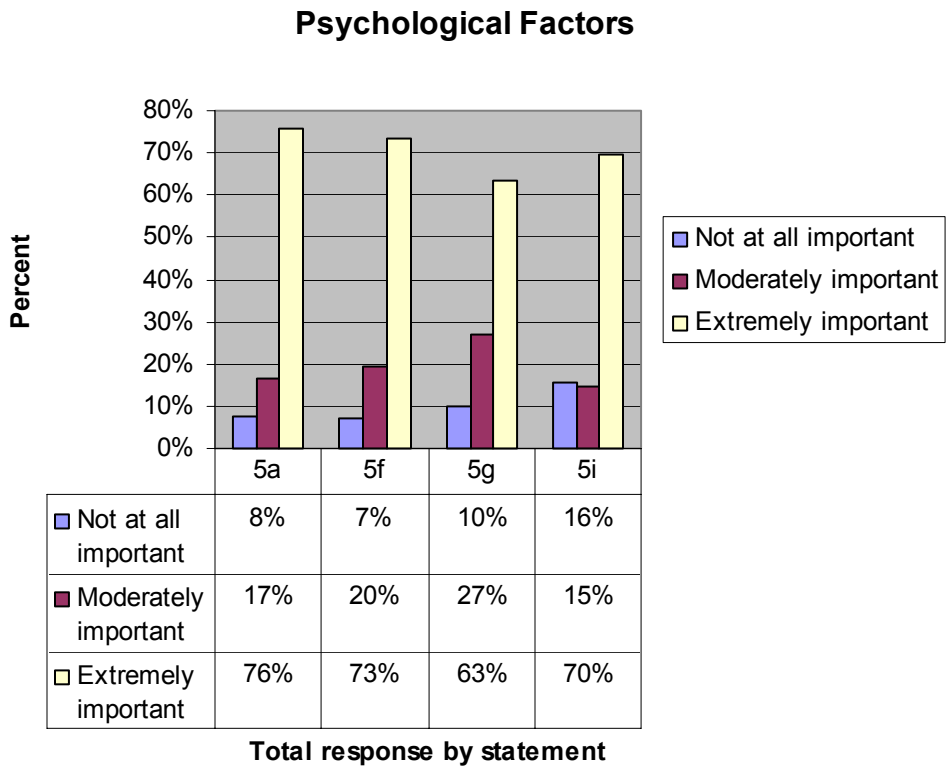
Figure 6 Civic Duty factors across all volunteers.

Our volunteers' responses revealed a strong relationship between education and both civic duty motivational statements. A strong association arose between education – volunteers with "some college" experience – and the following statements: (5e) "To do something positive for future generations" (x^2 = 0.00, p =0.05, df = 8), and (5k) "To do the right thing" (x^2 = .019, p = .05, df = 8).

Of the two retirees who completed the questionnaire, one Board member noted "being active as a retiree" (5l, Appendix D) as a very important motivation, while the other noted it was only moderately important. Due to the fact that this statement applied to only two members within the sample group, the statement was not included in Figure 6.

6.2.3 Psychological

The statements related to psychological motivations all received between 63 and 76 percent response rates as an "extremely important" motivation (Figure 7). The motivation "To be outdoors" (5a) was the most frequent response (76 percent), while the statement "To experience something new" (5g) garnered the fewest responses (63 percent). Although this statement received a low response rate, it was strongly linked to day of the week (x^2 = 0.019, p = 0.05, df = 4), but with only a 55 percent cell count, suggesting results should be interpreted with caution (Appendix E). Volunteers on Friday were more likely to note the importance of this driver.



	5a	5f	5g	5i
Not at all important	8%	7%	10%	16%
Moderately important	17%	20%	27%	15%
Extremely important	76%	73%	63%	70%

Figure 7 Psychological factors across all volunteers.

I should note that the statement "To be outdoors" was only offered to restoration event volunteers, not Board members, and therefore, only reflects responses from event volunteers.

Two motivational drivers [developing new skills (5l), physical limitations (5n): Appendix D] that I expected to be applicable for Board member volunteerism ranked very lowly

as reasons for becoming Board members. Due to the noted lack of importance, these statements were not included in Figure 7.

6.2.4 Social

The intrinsic social motivation "To be with friends" (5b) received a 59 percent response rate (Figure 8). Likewise, the other social motivation – "To make the area more useful for other human uses" (5j) – received a low response rate as a significant reason for participating in the restoration event.

Volunteer responses revealed a strong association ($x^2 = 0.012$, $p = .05$, df = 4) between the driver "To be with friends" and the day of the week, although the cell count was low, only 33 percent. Volunteers on Friday were much more likely to report the importance of this statement as extremely important compared with volunteer responses on Saturday.

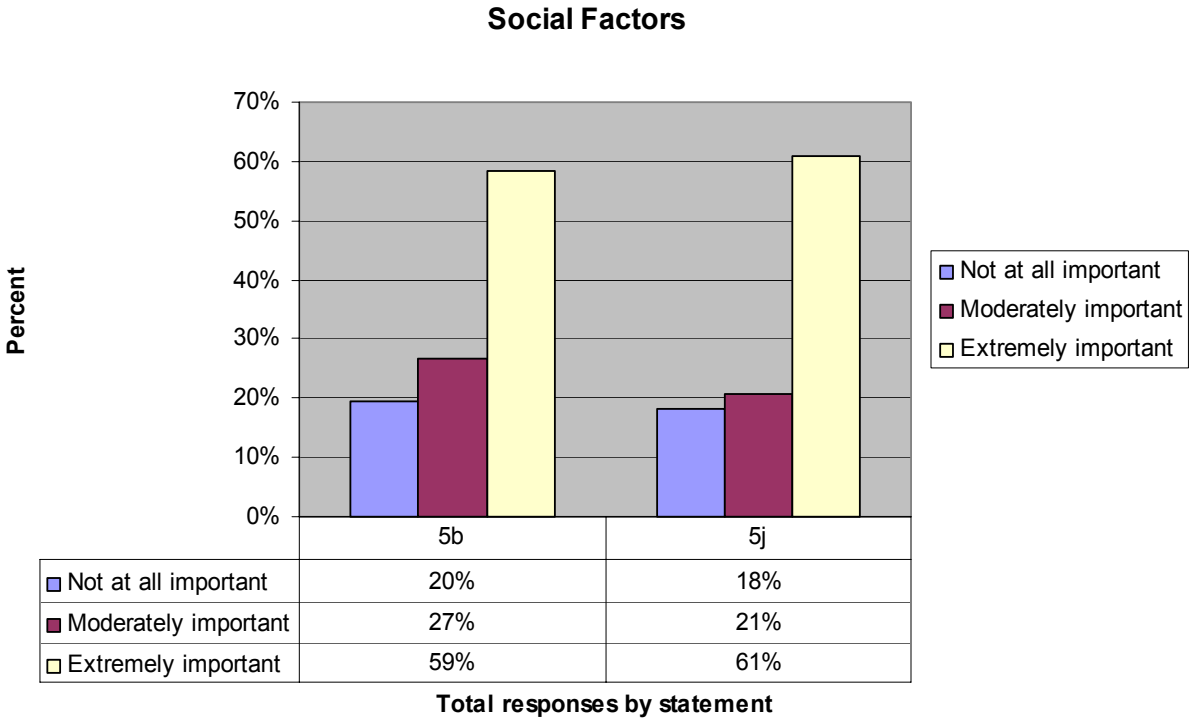


Figure 8 Social factors across all volunteers.

As expected "To be with friends" ranked very lowly among Board member responses. Even before I collapsed the Likert-scale, three out of the four Board members ranked this statement as "not important at all," while the fourth ranked it as only "moderately important."

6.3 Narrative Results

We collected 23 narrative responses over the course of the two days. Most of our interviews lasted approximately four minutes, although one lasted as long as 18 minutes.

All four of the Board members provided narrative responses to the questions appended to their written questionnaire. One Board member also provided me with a copy of his letter of interest/introduction to TBW.

Overall, narrative responses echoed the results produced by our written questionnaire. We asked volunteers what they expected to get out of the restoration day experience from a personal perspective. Responses ranged from camaraderie (intrinsic motivation) to being there for a class (extrinsic motivation). The predominant response was to wanting "to make a difference," often with a reference to preserving the environment for future generations (intrinsic and extrinsic motivation).

6.3.1 Other volunteering

Most restoration event volunteers noted participation in other volunteer activities ranging from work at animal shelters to hospice to other environmental volunteering. Their responses conveyed an underlying desire to engage in service to give back to the community (intrinsic motivation). In some instances, this sense of service stemmed from life paths that fostered a push for active volunteerism (being led by example) and/or the desire to foster active volunteerism (being an example to others).

6.3.2 Volunteer recruitment

When we asked what they would do to encourage others to volunteer, the most common response was to educate others about the perceived plight of the environment. Others noted that lunch was a good motivation. Still others offered ideas for boosting awareness of environmental issues and opportunities for engaging in restoration activities via the internet as well as print and radio media.

Several volunteers noted a desire to engage young people, even as young as five, in restoration activities. These volunteers seemed to demonstrate a desire to foster environmental stewardship within their family units.

6.3.3 "Name one thing…"

Our written questionnaire included one open-ended prompt – "Please name one thing local residents can do to improve the quality of the Bay." Responses to this statement ranged from reducing fertilizer use to the very creative "Move North and take somebody with you!" However, by far and away, the most common response to the question had something to do with preventing or picking up litter.

6.3.4 Board member perspectives

The questions I asked the Board members differed from the questions we asked restoration event volunteers (Appendix D), but were still designed to allow Board members to elaborate on their own reasons for volunteering. Three of the four respondents noted that TBW's commitment to the cause of improving the Bay's environment significantly impacted their decision to join the Board. This data aligns with their responses to the motivational statements in the written questionnaire.

When asked what one thing they each wanted to accomplish while serving as Board members, three of the four referenced a strong desire to increase environmental stewardship among the local populous and to foster an education legacy. All respondents indicated an intention to remain board members for an undetermined amount of time;

however, three of the four directly indicated their desire to participate for as long as possible, e.g., "as long as they will let me" or "until they kick me out!"

6.4 Observation

As noted previously, volunteer motivations did not vary much between the two days on paper. However, our observational data revealed some behavioral differences between the two groups. Since none of the four Board members participated in the restoration event, I gathered no observational data for that group.

6.4.1 Friday

During activities on 10 February, more of the volunteers seemed to know each other socially compared to the turn-out on Saturday. Throughout the day Friday, as they worked, volunteers engaged in conversation about social events, fishing trips, recent luncheons, and even an upcoming trip in their safari club. I noticed volunteers were fairly evenly mixed in tasks, introducing themselves to strangers and not confining themselves to working only with the people with whom they arrived.

Most volunteers on Friday were wearing apparel that indicated participation in some other form of volunteering, e.g., TBW volunteer events from previous years, local charity drive t-shirts, etc. Several volunteers, like passers-by, asked questions about the project – why place the shell in bags? Are the bags harmful to the environment? Will they biodegrade? How will this project impact the trees along the shoreline? Volunteers with more experience were eager to offer accurate answers to any and all questions.

Throughout the day, volunteers worked steadily, self-designated leadership roles for small tasks, and easily established methods for completing the task(s) at hand with little instruction; however, they seemed as much engaged in the social aspects of the day as they were in the overall goal of restoration. They worked at an easy pace, chattered

incessantly, and took time out to appreciate the visit of several special guests – a small pod of dolphins that made an appearance in one of the lagoons.

6.4.2 Saturday

On 11 February, the volunteer composition was much more mixed in terms of age – several parents with young children and a few Boy Scouts participated. On this day, most of the volunteers clung to the people with whom they arrived, working in smaller groups. Volunteers worked much more fervently than the group on Friday. They appeared to be fixedly goal oriented, focused on the task(s) at hand, and less engaged in the social aspects offered by the day's activities.

On Saturday, when it appeared that the volunteers were bagging shell too quickly (i.e., likely to finish the task much sooner than TBW staff expected and before lunch would be ready) we encouraged the group focused on the shell pile to slow down and take more frequent water breaks. The volunteers complied by ceasing to shovel shell; however, they maintained a high activity level by finding other ways in which to make themselves useful – sweeping stray shell, cleaning up trash in the area, walking down to the restoration sites to see if they could be of use placing shell in the water. They did not seem to be interested in relaxing and socializing during this down-time, but preferred to remain active and mission-focused.

Our observational data is the one survey mechanism that allows some fairly clear connection to intrinsic and extrinsic motivation. This data seems to indicate that Friday's volunteers were more intrinsically than extrinsically motivated. The volunteers Friday worked at a leisurely pace and appeared to be focused on enjoying the event itself. Our observational data from Saturday points to a higher degree of extrinsic motivation. Volunteers were very task-oriented, indicating that their motivation may have stemmed from a desire to produce an outcome (extrinsic). This has implications for recruitment strategies (See "So What?").

7.0 So What?

Our results revealed that the strongest motivational factors reported by Tampa Bay area volunteers, regardless of position (Board member or restoration event volunteer), fall under environmental stewardship and civic duty. These results confirmed my expectations. However, the social factor was less important than I thought it would be with the restoration event volunteers. This could simply be a function of the individuals that attended this particular event. The only way to resolve this question is through a deeper investigation into the patterns of volunteering among TBW's volunteer base.

7.1 Bias

A significant footnote to my results is one that we have been aware of from the outset of this project – that volunteers who participate in restoration events are likely to possess some predilection toward engaging in environmental causes. This assumption seems to have been borne out in the results, e.g., two of the top three motivational drivers (statements) fell under environmental stewardship. Volunteers also bolstered this assumption by expressing their commitment to and interest in environmental issues and causes via narrative responses, their apparel, and their inquisitiveness about the project, i.e., are the bags biodegradable?, etc.

7.2 Motivation, Messaging, and Recruiting

Examining responses to each motivational statement and/or each of the four motivational factors is useful in terms of messaging and short-term gains in recruitment, i.e., expanding recruitment among college students focused on natural resources or civic organizations. Tampa Bay Watch's current messaging – "Saving the Bay Every Day" – already connects active and potential volunteers with the Environmental Stewardship factor. That tag line also resonates with the Civic Duty factor in that it hints at a commitment to action.

So, while understanding the distinct factors is important, I believe it is in TBW's long-term interest to improve their understanding of their volunteers' motivation as either extrinsic or intrinsic. This will help them shape the growth of their organization and the programs it offers.

Since environmental stewardship drivers bring rewards such as improved human health via restored ecological services, we could consider them extrinsic motivations. In other words, a volunteer's motivation to get involved in habitat restoration is extrinsic if it stems from the desire to gain something from the action (e.g., consuming fish that are not contaminated as a result of cleaner water fostered by natural filtration through the oyster reef). Alternatively, the motivation is intrinsic if it stems from an internalization of information (e.g., healthy habitats are valuable) that translates to a behavior (e.g., restoring an oyster reef).

Based on the wording of the top environmental stewardship statements – "To return a part of the coast to its *proper* condition" (5c) and "To improve the area for *wild-life/other species*" (5d) (emphasis added) – a strong case can be made that respondents interpreted both statements from an intrinsic, non-reward-based perspective.

In addition, volunteers' narrative responses about improving environmental awareness and education indicate a link between environmental stewardship and intrinsic motivation. Volunteers seemed to think that just being aware of the problems in the Bay area would be enough to spur action on the part of their fellow human beings – without any indication that we humans might benefit from correcting said problems. Volunteers on Friday also seemed to simply enjoy being part of the event itself which is fundamental to the definition of intrinsic motivation.

As it is phrased, the first statement (5c) hints at the fact that we human beings have altered or impaired coastal habitat, and, therefore, are obliged to "fix" it or improve it, e.g., return it to its "proper" condition. This improvement may not directly benefit hu-

mans in any way, thereby making the action itself the motivation. An argument could be made that improving habitat is an extrinsic motivation because we derive benefits from healthy habitats. However, this determination requires a relatively deep understanding of the connections between habitats and the larger ecosystem, which may or may not be commonly held among volunteers. In the absence of clarity regarding that assumption, an argument can be made that responses to this statement are intrinsically motivated.

The civic duty driver ("To do something positive for future generations") is arguably linked to what Ryan and Deci (2000) consider an extrinsic motivation. As noted previously, extrinsic motivation is driven by the desire for some gain or a desire to comply with a regulation or derive a reward from one's action. The aforementioned civic duty driver is extrinsic in that it offers volunteers the reward of believing their offspring will enjoy improved living conditions as a consequence of the day's activities. True, volunteers may feel good about themselves by doing something positive for future generations – intrinsic – but, if they are doing it for some gain – as a service to future generations or so that future generations will receive some reward – then our volunteers' involvement is extrinsically motivated.

Our volunteers' responses to the written narrative – Name one thing local residents can do to improve the quality of the Bay – also echoed an extrinsic motivation. They overwhelmingly noted a need to prevent and/or pick up litter. I thought perhaps this motivation was driven by an education campaign in the Tampa area; but when I inquired about one, I discovered that not to be the case (TBW, 2006). The most logical explanation, then, seems to me to be the fact that litter is visible and directly impacts an individual's enjoyment of a natural area. Volunteers are extrinsically motivated to clean it up or prevent it, based on their return on investment – clean beaches and water ways to enjoy – or intrinsically motivated to pick it up based on a value system that they learned at some point, e.g., pick up after yourself – it's the right thing to do. Only further inquiry will help us determine the bent of that motivation.

Based on their written responses to the questionnaire, the greatest reward the Board members are seeking is to foster a legacy of environmental stewardship in Tampa Bay. Leaving a legacy is a strong intrinsic motivation in that it indicates alignment with internalized personal values about the Bay. However, it is a significant extrinsic motivation in that the members want to ensure that Tampa Bay's environment will thrive and be cared for long after they are gone.

Many restoration day volunteers echoed this commitment to educating their community about the need for further conservation. As with the arguments noted earlier, this dedication to the cause of conservation appears to be related to both extrinsic and intrinsic motivational factors.

Whether the motivation is extrinsic or intrinsic, TBW can capitalize on this desire to educate and build stewardship via their recruitment strategies. Tampa Bay Watch is building an education center on the TBW property. Their current volunteers and Board members are aware of the plans. Both TBW staff and volunteers are excited about plans for the center. The organization may stand to gain new volunteers by advertising the center as it nears completion. I expect that TBW is already raising awareness among local teachers about the center and its offerings – if not, again, they would do well to begin spreading the word now!

7.3 Follow-Up

Tampa Bay Watch definitely needs to proceed with plans for panel sessions and/or follow-up interviews to learn more about whether/how the volunteer experience on 10-11 February changed volunteer motivations, attitudes, or behaviors relative to coastal habitat restoration. Furthering the organization's understanding of the importance of both extrinsic and intrinsic motivation is significant if TBW is to capitalize on the motivations of Tampa area volunteers, and improve its ability to secure grants for future projects.

Tampa Bay Watch seems to have had a steady stream of volunteers engaging in their habitat restoration projects over the years. However, given the data trend of decreased volunteerism nationwide (McCurley, 1996), TBW should be on the look-out for opportunities to, at the very least, maintain their volunteer base, if not increase it through partnerships with like-minded organizations or agencies.

Tampa Bay Watch should also consider continuing to carefully orchestrate volunteer activities so as to reinforce the three needs of competence (understanding how volunteer activities support conservation goals), autonomy (the freedom of volunteers to work in a manner conducive to their needs so long as their actions facilitate project goals), and relatedness (facilitating social connections among volunteers and between volunteers and staff) (Ryan and Deci, 2000). Regardless of the nature of the motivation (extrinsic or intrinsic) these three components are necessary to sustain volunteer motivation.

7.4 "Feeding" Volunteers

7.4.1 Competency

During the event at Fort De Soto, TBW staff fostered volunteers' sense of competency through a brief introduction regarding the natural history of the area and the need for their current project. They also reinforced their understanding of the need for restoration by answering questions throughout the day.

Tampa Bay Watch staff can improve this aspect of their program by taking advantage of the captive audience they collect at the beginning of each restoration activity. At the beginning of the day, volunteers at the restoration site were alert and excited, in a state that primed them for receiving information about the natural environment. Tampa Bay Watch staff can take advantage of this situation to expand citizen understanding of the Bay's environmental issues, thus fostering a deeper sense of environmental stewardship.

Board members also present a captive audience of sorts. Their in-depth involvement in issues within the organization affords TBW staff more frequent opportunities to educate Board member volunteers about the Bay's issues, while at the same time, engaging their expertise in guiding TBW activities to solve the problems.

7.4.2 Autonomy

Throughout the restoration event, volunteers were free to engage in activities according to their interest(s) and ability. This is a critical part of the success of the program, and feeds the motivational need for autonomy. Several volunteers noted in the narrative responses that they enjoyed being able to find their niche within the activity. This freedom increases the likelihood that volunteers will enjoy their experience by allowing them to choose the tasks that will engage them.

In addition, TBW offers volunteers multiple programs through which to volunteer, each with a different set of skills required. In theory, a volunteer who shows up for a restoration event and determines that this is not the volunteer mechanism for him or her could find another opportunity to volunteer via another TBW program.

7.4.3 Relatedness

Lunch is a significant component of the program and a useful one for fostering relatedness. Several volunteers noted that lunch was something they would mention to motivate other participants. It also offers volunteers and staff time to be social.

The nature of the restoration event itself – working in teams to complete the project – fosters the social aspect of relatedness, although the event could be structured so as to encourage increased mixing of participants. Ryan and Deci's work (2000) does not directly indicate the form in which relatedness is required in order for that need to be fulfilled, i.e., does it require relating with familiar persons or strangers? It may not make a significant difference so long as some level of connectivity exists.

I think, too, that relatedness can apply with respect to connecting volunteers with the environment. The very nature of habitat restoration achieves that end through hands-on activities. In this sense, relatedness can be fostered in concert with competency. Volunteers learn more about the environmental issues in the Bay as they engage in hands-on work, and therefore, we expect that they will begin to make connections and understand their role within the larger context of coastal habitat restoration. This, in turn, feeds their sense of competency about their role, which spurs self-directed action (autonomy), which continues to increase their sense of relatedness.

Relatedness is also important for maintaining Board member participation. Professional team structures, such as the Board, thrive when members feel engaged and connected to one another. If they do not currently do so, TBW would be wise to encourage Board members to participate in restoration day activities on a regular basis, perhaps as frequently as once per quarter. This will engage the members in on-the-ground activities, while allowing them to connect with other Board members and restoration day volunteers.

7.5 Funding opportunities

Regarding intrinsic motivation in particular, if future studies in the Tampa Bay area reveal that intrinsic motivation is a significant or growing driver for volunteerism within the organization, TBW programs may stand to benefit from emerging educational funding opportunities in habitat restoration. If TBW can demonstrate that intrinsic motivation is the leading driver for volunteerism within the community, the organization should investigate links between intrinsic motivation and its educational activities.

Arguments can certainly be made for general links between intrinsic motivation and environmental stewardship, or what is now being termed environmental literacy. Although the term environmental literacy still has varied definitions, materials on the subject describe a significant difference between the level at which an individual is aware

of environmental issues and the level at which she or he can be considered environmentally literate, a state which requires action based on an understanding of the issue (Coyle, 2005). If TBW can demonstrate a connection between its own educational programs and an intrinsically motivated desire among its volunteers to restore habitat, then the non-profit may be able to leverage that information in grants applications for funds to continue and expand TBW educational programs.

8.0 CONSIDERATIONS AND OTHER FINDINGS

8.1 SAMPLE SIZE

Our sample size for this project, 78 useable participant surveys and four Board member surveys, is relatively small. As a consequence, though inferences and general extrapolations might be made from this data, the accuracy of those extrapolations, given the preceding sources of error, limit the applicability of our results. Expanding our data set through the other planned future studies will make the results more useful and statistically defensible.

8.2 EDUCATION

Although I had no expressed hypotheses about education and environmental stewardship or stewardship, I was still surprised to see no significant link (no strong relationship, based on chi square) between environmental stewardship statements and higher education. Educational literature suggests that those who progress through higher education often gain a better understanding of the complexities involved in environmental issues (Coyle, 2005), i.e., these individuals are more likely to possess a greater awareness and understanding of how such things as using fertilizer on lawns connects with issues such as nutrient loading in a bay. Based on this literature, we might reasonably expect individuals with higher education (completed college or post-graduate degrees) to take some action to mitigate those perceived impacts.

The data, in this case, does not appear to support that argument. However, I expect significant differences among education levels may arise relative to environmental knowledge via other parts of the written questionnaire (e.g., Do you live in the Tampa Bay watershed?). That data set will be made available via the interdisciplinary team's final report.

8.3 HINDSIGHT 20/20

8.3.1 Stay the Course

In future implementations, what would I recommend we repeat? The process we used to gather data worked well. Our method of having volunteers sign in and immediately report to the adjacent table to pick up a questionnaire helped facilitate a speedy and smooth process. Tampa Bay Watch was organized enough to provide an ample number of clipboards and pencils to volunteers. They also made seating available on site where volunteers could relax while completing the questionnaire. Pleasant persistence on the part of those gathering the questionnaires also ensured a strong response rate via the written questionnaire.

Tampa Bay Watch Director, Peter Clark's announcement to volunteers during the days' introductions explained the interview process. This may have helped volunteers be more receptive to speaking with our interview staff, providing us with good feedback in narrative form. Volunteers should definitely be made aware of who the "strangers" are on site and why they will be asking questions. Some volunteers also found it interesting to know that the data we were collecting would be compiled with a larger data set from volunteers across the country. I also believe that responses to my questionnaire to the Board were aided by Peter's offer to introduce me to the Board members.

Overall, the processes employed to gather data were acceptable and well-organized for a trial run. We can certainly expect further room for improvement as we move forward and obtain feedback via the other pilot studies.

8.3.2 Changing Tack

Given the opportunity to repeat this study, would I change anything? Yes. Looking back over the written questionnaire, I would recommend changing the tool. Several volunteers jokingly commented to us that the questionnaire was rather lengthy. They all willingly completed it (to varying degrees), however, it would be less burdensome to them if it were shorter.

We should strongly consider revising the tool to focus on one or two areas at a time, e.g., motivation and barriers or attitudes and behaviors, instead of all of the aforementioned in one fell swoop. This modification is likely to require more funding and will definitely require more time on the part of the personnel involved in data gathering and processing; however, it will lighten the burden placed on the volunteers and may speed requisite Office of Management and Budget (OMB) approval processes for a formal implementation of this human dimensions research activity.

In addition, the lack of variability in responses gives me reason to reconsider the structure of question five in the written questionnaire. As we developed the written questionnaire, one member of our interdisciplinary team expressed a concern that we might see little variability in responses regarding motivation. This team member noted that volunteers might be tempted to respond to our questionnaire in a manner consistent with what the volunteer believes we want to hear instead of responding honestly. In other words, we were aware that volunteers might choose "very important" or "extremely important" as their response to most, if not all of the statements provided under motivation, simply because all the statements could be perceived as "right" or "socially acceptable" answers. Like the aforementioned bias toward environmental stewardship, this concern, too, seems to have been borne out in the results.

The Likert-scale structure offered respondents a choice of 1-5 (not at all important to extremely important). The mode across all categories in the collapsed data set was a five, the highest level of importance. Even prior to collapsing the data set, the mode

was either a four or five. This could signify that all motivational drivers offered were important to volunteers. However, it is equally plausible that volunteers were drawn to or felt compelled to state that all drivers are important, regardless of their true personal perception.

Although some respondents, the Board members in particular, did score a few statements as being of little importance or no importance, the preponderance of "very important" or "extremely important" responses calls into question the validity of the responses and the reliability of the survey instrument. Did volunteers give high marks to statements because they truly believed them to be important? Or, due to the way the statements were phrased, were they drawn to mark them as important because that appears to be the "socially acceptable" response? In other words, we may have worded all of the statements such that volunteers were drawn to a response that said "of course that's important to me!" and, thus, they circled "very" or "extremely important." For this reason, too, the interdisciplinary team should consider rewording the statements within section five of the written questionnaire (Appendix A).

The narrative and observational aspects of the study support the volunteers' sense of the importance of civic duty and environmental stewardship factors. However, I still maintain that the reduced variability in responses may suggest a need to revise the survey tool.

How can we adjust the tool to address this issue of validity and perfunctory response? One option that we considered early in the development of the survey instrument was asking volunteers to rank the motivational statements from greatest importance to least importance. While this helps to solve our problem of uniform ranking for all statements (i.e., all "extremely important"), it presents an alternate problem – forcing volunteers into what may be an unnatural choice. In other words, a volunteer may find two motivational statements equally valid. Asking him or her to rank them may force a choice that is not truly valid.

One other option is to adjust our use of the 5-point Likert scale. We could simply anchor the ends with Very Unimportant (1) and Very Important (5), and allow volunteers to choose the appropriate number. We could also offer the anchored format with a broader, 7-point scale, to see if this changes the outcome(s).

My final recommendation, an attempt to address the issue of bias, is to include a question asking why the volunteer is on site for the event. The question could either be open-ended (narrative, e.g., Please describe your reason for volunteering today) or multiple-choice. A multiple-choice option could be structured as follows:
Are you volunteering today because… (Circle one or more of the following):

- I am a member of TBW
- I regularly volunteer with TBW
- I regularly volunteer for environmental organizations
- I volunteer with another organization and wanted a new volunteer experience
- I am fulfilling service hours
- I was invited by friends
- I was invited by a family member
- I am a member of an organization that is participating today (e.g., Scouts, Rotary, etc.)
- Other _____

This data could help TBW weed out some of the bias we presupposed to be generated by volunteers with a bent toward natural resource issues. By examining relationships between the above statements and motivation, TBW may begin to see patterns among their volunteer responses. Do volunteers who only say they are at an event because friends invited them have any stronger or weaker bent toward environmental stewardship than those who regularly volunteer with TBW or another environmental organization?

Understanding this relationship will help TBW determine whether or not their volunteer base is already part of the "choir" that recognizes the need to conserve natural resources. These stewardship-oriented volunteers are presumably already engaged in behaviors that protect, conserve, and restore the Bay. Therefore, if TBW wants to foster environmental stewardship in Tampa and enhance the results of its mission to "Save the Bay Every Day," then the organization should consider ways to recruit and/or educate a volunteer base beyond those who already believe in the cause.

We need to engage the interdisciplinary team in further discussion about all of these issues with the survey tool. As with the need to address bias, results from the other pilot study projects may provide us with insight regarding variability, validity, and options for improving the written questionnaire.

8.3.3 Other associations and relatiionships

In this paper, I would have liked to address more of the data we collected, e.g., correlations between motivations and barriers or motivations and general environmental behavior. Due to time constraints, that assessment was not possible. However, through the overall assessment being performed by RAE and NOAA, these types of correlations should be made available later this year.

8.4 MIND THE GAP

Research by Peterson (1982) points out that correlation does not necessarily equal causation. In other words, while a person may "possess a basic appreciation and concern for the natural environment," that appreciation seems to require a catalyst to turn the interest into action. This is often the case in the evolution of intrinsic motivation.

A person may be interested in conserving natural resources, and may even be knowledgeable about the issues, but we cannot assume that she or he will necessarily internalize that information and develop a motivation to act on that interest. Due to general

declines in volunteering in recent years (McCurley, 1999), further research on the area of barriers to action is needed to improve our understanding of this gap between interest and action, awareness and motivation.

This type of research has implications for programs like NOAA's CRP, for its partner organizations like RAE, and for local organizations like TBW that depend on volunteer support. Perhaps even more importantly, this research has implications for a community-based habitat protection program still under development within NOAA. In order to continue successfully and grow in the future, these organizations all need to strive together to bridge that gap between a general appreciation for the environment and the motivation to act.

9.0 THAT'S ALL SHE WROTE

I feel I can say with certainty that volunteer motivation has been and will remain a source of interest for myriad organizations throughout the United States. Our culture relies increasingly on the work of volunteers to protect, conserve, and restore natural resources. As such, our ability to garner and maintain the support of dedicated volunteers will drive the extent of our success.

In a culture that is increasingly transient and disconnected, opportunities to engage in locally-based volunteer activities like habitat restoration serve to re-establish our sense of community and connectedness. This principle of connectivity is fundamental to ecology. The connections that sustain ecosystems are not just those that exist between the non-human elements in the system. In fact, it is increasingly evident that the connections between the human and non-human elements of the system are of paramount importance.

Hands-on habitat restoration actively connects humans with the natural environment. The 17th century author, Francois de La Rochefoucauld, once wrote that "Nothing is so

contagious as example; and we never do any great good or evil which does not produce its like." As evidenced herein, volunteers around Tampa Bay are willing examples of the type of people who know that their actions do make a positive difference. They freely offer time and talent to an organization (TBW) that provides them with opportunities to actively demonstrate their sense of stewardship for an environment they cherish.

As our culture changes in the coming decades, we need to continue paying close attention to the motivations of volunteers. Our ability to foster continued successes in coastal habitat protection, conservation, and restoration relies on our ability to effectively motivate citizens into positive action so that, by example, we volunteers can effectively lead and benefit our peers as well as coming generations.

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APPENDIX A: SAMPLE VOLUNTEER QUESTIONNAIRE, RESTORATION EVENT VOLUNTEERS

Thank you for taking the time to complete this quick survey. By doing so, you are helping us to understand our volunteers better and to improve our restoration programs. You will be asked about your thoughts on the Bay in general, what inspired you to come to this restoration event, what you do to help the Bay, and potential challenges you may experience to participating in eco-friendly activities. The survey results will be used by Restore America's Estuaries and Tampa Bay Watch for human dimensions research in ecological restoration. Your responses are voluntary, confidential, and maintained as anonymous unless you volunteer to provide us with your contact information.

If you are interested in the survey results, the findings will be made public on the Restore America's Estuaries (RAE) website in early 2007:

http://www.estuaries.org

In the following questions we would like to learn more about your background and interests in Tampa Bay, and in environmental activities in general.

1. **Are you a member of Tampa Bay Watch?**

   1 YES

   2 NO

   If YES, for how many years? _____ YEARS

2. **Have you volunteered for other environmental activities during the past: (please circle only one answer)**

   30 DAYS 60 DAYS 90 DAYS 12 MONTHS NOT AT All

   If YES, what type of group have you volunteered with? (circle all those that apply, or leave blank if none apply)

   Tampa Bay Watch Work

   Association/Social Club Community Organization

   School Faith

   Other (please specify) _____

3. Have you volunteered for another community activity or project (non-environmental) during the past: (please circle only one answer)

30 DAYS 60 DAYS 90 DAYS 12 MONTHS NOT AT All

4. Have you recreated on the Bay at any time during the past 12 months?

1 YES

2 NO

If YES, approximately how many days did you participate in each of the following activities during the past 12 months?

Power Boating _____ Days Photography _____ Days Diving _____ Days

Kite Surfing _____ Days Swimming _____ Days Fishing _____ Days

Canoeing _____ Days Bird-Watching _____ Days Sailing _____ Days

Windsurfing _____ Days Snorkeling _____ Days Kayaking _____ Days

Walk/Run/Bike on Bay-side trails _____ Days

Other activities (please specify) _____

_____

_____

5. In the following questions, please indicate how important each item is to you as a reason to participate in coastal restoration. (please circle one answer per item)

	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
a) To be outdoors	1	2	3	4	5
b) To be with friends	1	2	3	4	5
c) To return a part of the coast to its proper condition	1	2	3	4	5
d) To improve the area for wildlife/other species	1	2	3	4	5
e) To do something positive for future generations	1	2	3	4	5
f) To learn about the natural environment	1	2	3	4	5
g) To experience something new	1	2	3	4	5
h) To prevent a larger ecological crisis	1	2	3	4	5
i) To feel empowered to make a difference	1	2	3	4	5
j) To make the area more useful for other human uses	1	2	3	4	5
k) It's the right thing to do	1	2	3	4	5

6. In the following questions, please indicate the extent to which you agree or disagree with the following statements about the coastal environment. (please circle one answer per item)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Don't Know
a) Humans have the right to modify the coastal environment to suit their needs	1	2	3	4	5	6
b) When humans interfere with coastal environments, it often produces disastrous consequences	1	2	3	4	5	6
c) The coastal environment is strong enough to cope with the impacts of modern society	1	2	3	4	5	6
d) Some negative impacts to the Bay are acceptable in exchange for some benefits to society	1	2	3	4	5	6
e) Isolated restoration projects will significantly improve the overall quality of the Bay	1	2	3	4	5	6
f) The ecological nature of the coastal environment is very delicate or easily upset	1	2	3	4	5	6
g) Humans are severely abusing the coastal environment	1	2	3	4	5	6
h) Nature will restore our coastal environment; there is no need to do restoration work	1	2	3	4	5	6
i) Restoration activities are only a short-term, temporary solution	1	2	3	4	5	6
j) Protecting Bay habitats is as important as restoring them	1	2	3	4	5	6
k) Humans have an obligation to leave coastal environments in a better condition for future generations	1	2	3	4	5	6
l) People can appreciate the Bay without spending time on or around it	1	2	3	4	5	6
m) Working together, we can improve the quality of the Bay	1	2	3	4	5	6
n) I make a positive impact on the health of the Bay	1	2	3	4	5	6
o) I can take more personal responsibility for protecting Bay habitats	1	2	3	4	5	6

7. How close do you live to the Bay?

_____ MILES AWAY

8. In the following items, please indicate how often you do each of the following. (please circle one answer per item)

	Never	Almost Never	Sometimes	Almost Always	Always	Not Applicable
a) Recycle newspapers, cans, or bottles	1	2	3	4	5	6
b) Refrain from littering	1	2	3	4	5	6
c) Pick up litter that is not your own	1	2	3	4	5	6
d) Encourage others to do environment-friendly activities	1	2	3	4	5	6
e) Walk, bike, carpool, or take public transportation to work or to run errands	1	2	3	4	5	6
f) Drive a hybrid/energy efficient car	1	2	3	4	5	6
g) Dispose of used motor oil at approved sites, e.g. Jiffy Lube	1	2	3	4	5	6
h) Turn off water instead of letting it run while brushing my teeth	1	2	3	4	5	6
i) Buy products that are environmentally-friendly	1	2	3	4	5	6
j) Buy recycled products	1	2	3	4	5	6
k) Use low-wattage, energy-efficient light bulbs	1	2	3	4	5	6
l) Adhere to fishing, boating and hunting laws	1	2	3	4	5	6
m) Contribute money to an environmental group	1	2	3	4	5	6
n) Participate (as a volunteer) in public meetings on environmental issues	1	2	3	4	5	6
o) Follow local environmental issues	1	2	3	4	5	6

9. Thinking about the activities listed above, to what extent do you agree or disagree with each of the following as reasons for preventing *you* from acting pro-environmentally? (please circle one answer per item)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) I think acting pro-environmentally costs too much	1	2	3	4	5
b) I don't always know how to behave pro-environmentally	1	2	3	4	5
c) I am not really concerned about trying to act pro-environmentally	1	2	3	4	5
d) Acting pro-environmentally is inconvenient	1	2	3	4	5
e) I don't have time to volunteer for environmental projects	1	2	3	4	5
f) I'm not sure who to contact to volunteer for environmental causes	1	2	3	4	5
g) I don't know where to find information about how to behave pro-environmentally	1	2	3	4	5

The following will help us learn a little more about you. Please be assured that the information you provide will remain strictly confidential; your name will *never* be associated with your answers.

10. What is your age? _____ YEARS

11. Are you:
1 MALE
2 FEMALE

12. What is your highest level of education (please circle one):

1 12th grade or less
2 High School/GED
3 Some college
4 College degree
5 Post graduate degree (M.S. or Ph.D. or equivalent)

13. What is your home (permanent) zipcode? _____ **Time lived there** _____ **YEARS**

14. If your permanent zipcode differs from your local zipcode (i.e., vacation home, school, etc.), what is your local zipcode? (if not applicable, please leave blank)

_____ **ZIPCODE** **Time lived there** _____ **YEARS**

15. Do you live in the Tampa Bay watershed?
1 YES
2 NO
3 I DON'T KNOW

16. May we contact you in a month for a brief follow-up about your experience?

1 YES If YES, what is your: Name:
Email:
2 NO Other contact information:

_____

_____

17. Please name one thing local residents can do to help improve the quality of the Bay.

_____

_____

APPENDIX B: SAMPLE GENERAL NARRATIVE QUESTIONS, RESTORATION EVENT VOLUNTEERS

The following five questions are the "starter" questions that will be used by each group to begin a dialog with participants. Further questions may be added via the dialog depending on the interest and expressions of the volunteer.

1. What brings you to this event?

2. What difference does your participation make to you, to the environment, or to the organization?

3. Has this experience changed you in any way?

4. Have you changed anything else in your life because of this experience?

5. If you were in a position to encourage other people to take action to protect the environment, what would you tell them?

At the Tampa Bay Watch event, we also asked volunteers:

1. Do you participate in other volunteer activities?

2. What do you personally expect to get out of this experience today or out of your other volunteer work?

3. Do you think that environmental interests are important in your life?

APPENDIX C: SAMPLE GENERAL OBSERVATION TOOL, RESTORATION EVENT VOLUNTEERS

COMMUNITY BASED RESTORATION PROGRAM
Observation protocol – Draft

1. BASIC INFORMATION

Observation date: **Restoration Site**: **Instructor(s):**Insert CBR educators

Program Type: Corporate Outing **Observer**: add other observer names

II. OVERVIEW

A. Summary. Briefly describe the session observed including introduction, activities, content, audience and community relevance.

B. Focus. Indicate the major intended purpose(s) of this session based on the information provided by the project staff.

III. VOLUNTEER EXPERIENCE

Engagement. Describe overall engagement level throughout the session. Include volunteers' questions and comments**.**

VI. RATINGS

Program Goals	Not at all (1) - To a great extent (5)
1. Session addresses Save the Bay's mission	1 Not at all
2. Session has clear objectives and has a sequential plan for achieving them	1 Not at all
3. Session teaches volunteers about the Bay and Wetlands (habitat, biodiversity, plant and animal life)	1 Not at all
4. Session addresses human impact on the Bay and Wetlands	1 Not at all
5. Session addresses actions volunteers can take to help the Bay	1 Not at all
6. Session addresses value of taking action	1 Not at all
7. Session addresses accessible outdoor recreation opportunities in volunteers' community (ies)	1 Not at all
8. Volunteers are highly engaged throughout the session.	1 Not at all
9. Volunteers appear to understand value of CBR experience.	1 Not at all

Best Practices in Environmental Education	Not at all (1) - To a great extent (5)
10. Session is appropriate for the target audience (taking age, experience, diversity into account)	1 Not at all
11. Session is interactive (active learning opportunity)	1 Not at all
12. Session teaches interdependence (all things are connected)	1 Not at all
13. Session provides opportunity to explore (promotes wonder)	1 Not at all
14. Session is relevant tending to community / surroundings	1 Not at all

IV. General Comments. Include highlights and suggestions for improvement / consideration.

V. Other Notes

APPENDIX D: SAMPLE VOLUNTEER QUESTIONNAIRE, BOARD OF DIRECTORS VOLUNTEERS

Greetings all ~

As I indicated in a prior email, your contact information was provided to me by Peter Clark. I am a graduate student at Virginia Tech and am currently working with the Office of Habitat Conservation within the National Oceanic and Atmospheric Administration (NOAA) in Silver Spring, MD. We are engaged in a research project with TBW that relates to my academic research interests, chiefly a study to assess whether and how hands-on, on-the-ground restoration events foster environmental stewardship in volunteers.

We finally finalized our human dimensions questionnaire! As promised, I slightly modified said questionnaire to help me understand your personal sense of environmental stewardship, and, specifically, learn a little bit more about why you volunteer as members of the TBW Board of Directors.

If you each will indulge me, I would like to solicit your responses to the modified questionnaire (~10 minutes of your time) along with three narrative questions (~20 minutes, depending on the level of detail you wish to provide). If you wish to offer further thoughts on your reasons for being involved with TBW or your thoughts on habitat restoration in general, you are more than welcome to do so. By no means, do I wish for this request to be burdensome, and I sincerely appreciate your input. If you have any inquiries about this request, my paper, or the overall project, please feel free to call or email me.

If possible, please complete, save the file as TBW board survey_[Insert last name], and email this questionnaire to me by 15 February. Thank you sincerely for your time!

Regards,
Laura

Thank you for taking the time to complete this quick survey. By doing so, you are helping me better understand your attitudes, behaviors, and motivations for volunteering as a member of TWB's Board of Directors. You will be asked about your thoughts on the Bay in general, what inspired you get involved with TBW, what you do to help the Bay, and potential challenges you may experience to participating in eco-friendly activities. The survey results will be used in a graduate research paper (Virginia Polytechnic Institute and State University [Virginia Tech]). Your responses are voluntary and confidential.

If you are interested in the survey results, the findings will be made available in a capstone paper published by Laura Walko via Virginia Tech, to be completed May 2006.

In the following questions I would like to learn more about your background and interests in Tampa Bay, and in environmental activities in general.

1. Were you a member of Tampa Bay Watch before becoming a member of the Board of Directors?

☐ YES ☐ NO

If YES, for how many years? _____ YEARS

2. How long have you been a member of the Tampa Bay Watch Board of Directors?

☐ 6 MONTHS ☐ 12 MONTHS ☐ 1-2 YEARS ☐ 2-5 YEARS ☐ 5+ YEARS

3. As a Board member, do you participate in hands-on restoration events?

☐ YES ☐ NO

If YES, how many per year? _____

4. Have you served/are you serving on the Board of any other non-profit organization?

☐ YES

☐ NO

If YES, for how many years? _____ YEARS

If YES, what type of organization? (circle all those that apply, or leave blank if none apply)

☐ Association/Social Club ☐ Community Organization

☐ School ☐ Faith

Other (please specify) _____

5. Have you volunteered for another community activity or project (non-environmental) during the past: (Please check only one answer)

☐ NOT AT All ☐ 30 DAYS ☐ 60 DAYS ☐ 90 DAYS ☐ 12 MONTHS

6. Have you recreated on the Bay at any time during the past 12 months?

☐ YES

☐ NO

If YES, on average, how many days did you participate in each of the following activities during the past 12 months?

Power Boating _____ Days | Photography _____ Days | Diving _____ Days

Kite Surfing _____ Days | Swimming _____ Days | Fishing _____ Days

Canoeing _____ Days | Bird-Watching _____ Days | Sailing _____ Days

Windsurfing _____ Days | Snorkeling _____ Days | Kayaking _____ Days

Walk/Run/Bike on Bay-side trails _____ Days

Other activities (please specify) _____

7. In the following questions, please indicate how important each item is to you as a reason to participate as a TBW Board member. (Please check one answer per item)

	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important	
a) To be with friends	1	2	3	4	5	
b) To help return a part of the coast to its proper condition	1	2	3	4	5	
c) To improve the area for wildlife/other species	1	2	3	4	5	
d) To do something positive for future generations	1	2	3	4	5	
e) To learn about part of the natural environment	1	2	3	4	5	
f) To experience something new	1	2	3	4	5	
g) To prevent a larger ecological crisis	1	2	3	4	5	
h) To feel empowered to make a difference	1	2	3	4	5	
i) To help make the coast more useful for other human uses	1	2	3	4	5	
j) It's the right thing to do	1	2	3	4	5	
k) To develop a new skill set	1	2	3	4	5	
l) To be active as a retiree	1	2	3	4	5	N/A
m) Because I am unable to participate in the physical aspects of habitat restoration activities	1	2	3	4	5	
n) Because I have a skill set that is needed	1	2	3	4	5	

8. In the following questions, please indicate the extent to which you agree or disagree with the following statements about the coastal environment. (Please check one answer per item)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Don't Know
a) Humans have the right to modify the coastal environment to suit their needs	1	2	3	4	5	6
b) When humans interfere with coastal environments, it often produces disastrous consequences	1	2	3	4	5	6
c) The coastal environment is strong enough to cope with the impacts of modern society	1	2	3	4	5	6
d) Some impacts to the Bay are acceptable in exchange for some benefits to society	1	2	3	4	5	6
e) Isolated restoration projects will significantly improve the overall quality of the Bay	1	2	3	4	5	6
f) The ecological nature of the coastal environment is very delicate and easily upset	1	2	3	4	5	6
g) Humans are severely abusing the coastal environment	1	2	3	4	5	6
h) Nature will restore our coastal environment; there is no need to do restoration work	1	2	3	4	5	6
i) Restoration activities are only a short-term, temporary solution	1	2	3	4	5	6
j) Protecting Bay habitats is as important as restoring them	1	2	3	4	5	6
k) Humans have an obligation to leave coastal environments in a better condition for future generations	1	2	3	4	5	6
l) I make a positive impact on the health of the Bay	1	2	3	4	5	6
m) People can appreciate the Bay without spending time on or around it	1	2	3	4	5	6
n) Working together, we can improve the quality of the Bay	1	2	3	4	5	6
o) I can take more personal responsibility for protecting Bay habitats	1	2	3	4	5	6

9. Do you live in the Tampa Bay watershed?

- ☐ YES
- ☐ NO
- ☐ I DON'T KNOW

10. In the following items, please indicate how often you do each of the following. (Please check one answer per item)

	Never	Almost Never	Sometimes	Almost Always	Always	Not Applicable
a) Recycle newspapers, cans, or bottles	1	2	3	4	5	6
b) Encourage others to do environment-friendly activities	1	2	3	4	5	6
c) Refrain from littering	1	2	3	4	5	6
d) Pick up litter that is not your own	1	2	3	4	5	6
e) Walk, bike, carpool, or take public transportation to work or to run errands	1	2	3	4	5	6
f) Drive a hybrid car	1	2	3	4	5	6
g) Buy recycled products	1	2	3	4	5	6
h) Turn off water instead of letting it run while brushing my teeth	1	2	3	4	5	6
i) Buy products that are environmentally-friendly	1	2	3	4	5	6
j) Dispose of used motor oil at approved sites, e.g. Jiffy Lube	1	2	3	4	5	6
k) Use low-wattage, energy-efficient light bulbs	1	2	3	4	5	6
l) Adhere to fishing, boating and hunting laws	1	2	3	4	5	6
m) Contribute money to an environmental group	1	2	3	4	5	6
n) Participate (as a volunteer) in public meetings on environmental issues	1	2	3	4	5	6
o) Follow local environmental issues	1	2	3	4	5	6

11. Thinking about the activities listed above, to what extent do you agree or disagree with each of the following as reasons for preventing *you* from acting pro-environmentally?(Please check one answer per item)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) I think acting pro-environmentally costs too much	1	2	3	4	5
b) I don't always know how to behave pro-environmentally	1	2	3	4	5
c) I am not really concerned about trying to act pro-environmentally	1	2	3	4	5
d) Acting pro-environmentally is inconvenient	1	2	3	4	5
e) I don't have time to volunteer for environmental projects	1	2	3	4	5
f) I'm not sure who to contact to volunteer for environmental causes	1	2	3	4	5
g) I don't know where to find information about how to behave pro-environmentally	1	2	3	4	5

The following will help us learn a little more about you. Please be assured that the information you provide will remain strictly confidential; your name will *never* be associated with your answers.

12. What is your age: _____ YEARS

13. What is your highest level of education (please check one):

☐ High School/GED
☐ Some college
☐ College degree
☐ Post graduate degree (M.S. or Ph.D. or equivalent)

14. What is your home (permanent) zipcode? _____

Number of years lived there _____ YEARS

15. If your permanent zipcode differs from your local zip code (i.e., vacation home, school, etc.), what is your local zip code? (if not applicable, please leave blank)

_____ ZIPCODE **Number of years living there _____ YEARS**

16. What prompted you to become a TBW Board member?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

17. What one thing do you hope to accomplish as a TBW Board member and why?

18. How long do you intend to participate as a TBW Board member and why?

If you would like to share anything else about your experience as a Board member or any other thoughts on restoration within Tampa Bay, please feel free to do so via email or an appended document. All of your responses will be extremely useful in my research. Thank you for your time!

APPENDIX E: STATISTICS

Motivational statements - Case Summaries by Education

EDUCATION		5a	5b	5c	5d	5e	5f	5g	5h	5i	5j	5k
12th grade or less	N	3	3	3	3	3	3	3	3	3	3	3
	Std. Deviation	2.30940	.00000	1.15470	1.15470	.00000	.00000	1.15470	.00000	.00000	2.30940	.00000
	Variance	5.333	.000	1.333	1.333	.000	.000	1.333	.000	.000	5.333	.000
HS/GED	N	1	1	1	1	1	1	1	1	1	1	1
	Std. Deviation	.	.	.	.	.	.	.	.	.	.	.
	Variance	.	.	.	.	.	.	.	.	.	.	.
Some college	N	17	17	17	17	17	17	17	17	17	17	17
	Std. Deviation	1.43486	1.66274	.66421	.66421	.66421	1.42457	1.24853	1.21268	1.59041	1.72354	.98518
	Variance	2.059	2.765	.441	.441	.441	2.029	1.559	1.471	2.529	2.971	.971
College degree	N	39	41	41	41	41	41	41	41	41	41	41
	Std. Deviation	1.09717	1.56486	.52730	.76190	.79939	1.11749	1.42110	.66259	1.41249	1.42110	.88345
	Variance	1.204	2.449	.278	.580	.639	1.249	2.020	.439	1.995	2.020	.780
Post-graduate	N	18	20	20	20	20	20	20	20	20	20	20
	Std. Deviation	1.09664	1.52177	.89443	.89443	.97872	1.36111	1.36111	1.49032	1.65116	1.62546	1.23117
	Variance	1.203	2.316	.800	.800	.958	1.853	1.853	2.221	2.726	2.642	1.516
Total	N	78	82	82	82	82	82	82	82	82	82	82
	Std. Deviation	1.22712	1.57823	.67475	.79935	.89564	1.22603	1.34054	1.04347	1.51356	1.57231	.99502
	Variance	1.506	2.491	.455	.639	.802	1.503	1.797	1.089	2.291	2.472	.990

Motivational statements - Case Summaries by Gender

GENDER		5a	5b	5c	5d	5e	5f	5g	5h	5i	5j	5k
Male	N	40	43	43	43	43	43	43	43	43	43	43
	Std. Deviation	1.10824	1.49417	.82594	.93178	1.14119	1.31942	1.47177	1.14119	1.53368	1.46725	.70121
	Variance	1.228	2.233	.682	.868	1.302	1.741	2.166	1.302	2.352	2.153	.492
Female	N	38	39	39	39	39	39	39	39	39	39	39
	Std. Deviation	1.34936	1.68505	.44691	.61471	.44691	1.11909	1.18925	.93803	1.49493	1.69941	1.22722
	Variance	1.821	2.839	.200	.378	.200	1.252	1.414	.880	2.235	2.888	1.506
Total	N	78	82	82	82	82	82	82	82	82	82	82
	Std. Deviation	1.22712	1.57823	.67475	.79935	.89564	1.22603	1.34054	1.04347	1.51356	1.57231	.99502
	Variance	1.506	2.491	.455	.639	.802	1.503	1.797	1.089	2.291	2.472	.990

Motivational statements - Case Summaries by Age

AGE		5a	5b	5c	5d	5e	5f	5g	5h	5i	5j	5k
.00	N	1	1	1	1	1	1	1	1	1	1	1
	Std. Deviation	.	.	.	.	.	.	.	.	.	.	.
	Variance	.	.	.	.	.	.	.	.	.	.	.
18-39	N	35	35	35	35	35	35	35	35	35	35	35
	Std. Deviation	1.40108	1.62336	.94558	.98048	.98731	1.40108	1.22440	.71007	1.48494	1.66426	.88688
	Variance	1.963	2.635	.894	.961	.975	1.963	1.499	.504	2.205	2.770	.787
40-59	N	29	31	31	31	31	31	31	31	31	31	31
	Std. Deviation	1.20753	1.58487	.00000	.60107	.85509	1.02862	1.30508	1.43084	1.62242	1.53525	1.08558
	Variance	1.458	2.512	.000	.361	.731	1.058	1.703	2.047	2.632	2.357	1.178
60+	N	13	15	15	15	15	15	15	15	15	15	15
	Std. Deviation	.00000	1.48645	.51640	.70373	.82808	1.18723	1.59762	.51640	1.47358	1.47358	1.12122
	Variance	.000	2.210	.267	.495	.686	1.410	2.552	.267	2.171	2.171	1.257
Total	N	78	82	82	82	82	82	82	82	82	82	82
	Std. Deviation	1.22712	1.57823	.67475	.79935	.89564	1.22603	1.34054	1.04347	1.51356	1.57231	.99502
	Variance	1.506	2.491	.455	.639	.802	1.503	1.797	1.089	2.291	2.472	.990

Chi-Square Tests - 5a by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.434[a]	6	.376
Likelihood Ratio	9.597	6	.143
Linear-by-Linear Association	4.109	1	.043
N of Valid Cases	78		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .08.

Chi-Square Tests - 5b by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.954[a]	6	.683
Likelihood Ratio	4.395	6	.623
Linear-by-Linear Association	.074	1	.786
N of Valid Cases	82		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .20.

Chi-Square Tests - 5c by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.560[a]	6	.363
Likelihood Ratio	8.753	6	.188
Linear-by-Linear Association	2.713	1	.100
N of Valid Cases	82		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .01.

Chi-Square Tests - 5d by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.398[a]	6	.880
Likelihood Ratio	2.897	6	.822
Linear-by-Linear Association	.821	1	.365
N of Valid Cases	82		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .01.

Chi-Square Tests - 5e by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.539[a]	6	.477
Likelihood Ratio	5.364	6	.498
Linear-by-Linear Association	.154	1	.695
N of Valid Cases	82		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .04.

Chi-Square Tests - 5f by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.826[a]	6	.830
Likelihood Ratio	3.186	6	.785
Linear-by-Linear Association	1.114	1	.291
N of Valid Cases	82		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .07.

Chi-Square Tests - 5g by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.481[a]	6	.205
Likelihood Ratio	8.921	6	.178
Linear-by-Linear Association	.814	1	.367
N of Valid Cases	82		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .10.

Chi-Square Tests - 5h by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.766[a]	6	.256
Likelihood Ratio	9.157	6	.165
Linear-by-Linear Association	.053	1	.819
N of Valid Cases	82		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .05.

Chi-Square Tests - 5i by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.133[a]	6	.907
Likelihood Ratio	2.412	6	.878
Linear-by-Linear Association	.024	1	.878
N of Valid Cases	82		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .15.

Chi-Square Tests - 5j by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.476[a]	6	.871
Likelihood Ratio	2.861	6	.826
Linear-by-Linear Association	.977	1	.323
N of Valid Cases	82		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .18.

Chi-Square Tests - 5j by Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.933[a]	6	.243
Likelihood Ratio	9.201	6	.163
Linear-by-Linear Association	.115	1	.734
N of Valid Cases	82		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .04.

Chi-Square Tests - 5a by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.845[a]	2	.655
Likelihood Ratio	.858	2	.651
Linear-by-Linear Association	.452	1	.501
N of Valid Cases	78		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.92.

Chi-Square Tests - 5b by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.062[a]	2	.216
Likelihood Ratio	3.123	2	.210
Linear-by-Linear Association	.037	1	.848
N of Valid Cases	82		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.61.

Chi-Square Tests - 5c by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.488[a]	2	.475
Likelihood Ratio	1.884	2	.390
Linear-by-Linear Association	1.399	1	.237
N of Valid Cases	82		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .48.

Chi-Square Tests - 5d by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.627[a]	2	.443
Likelihood Ratio	2.020	2	.364
Linear-by-Linear Association	1.459	1	.227
N of Valid Cases	82		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .48.

Chi-Square Tests - 5e by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.494[a]	2	.174
Likelihood Ratio	4.657	2	.097
Linear-by-Linear Association	3.351	1	.067
N of Valid Cases	82		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is 1.43.

Chi-Square Tests - 5f by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.723[a]	2	.697
Likelihood Ratio	.735	2	.692
Linear-by-Linear Association	.699	1	.403
N of Valid Cases	82		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.85.

Chi-Square Tests - 5g by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.069[a]	2	.355
Likelihood Ratio	2.157	2	.340
Linear-by-Linear Association	.468	1	.494
N of Valid Cases	82		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.80.

Chi-Square Tests - 5h by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.444[a]	2	.486
Likelihood Ratio	1.489	2	.475
Linear-by-Linear Association	.057	1	.812
N of Valid Cases	82		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.90.

Chi-Square Tests - 5i by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.047[a]	2	.218
Likelihood Ratio	3.179	2	.204
Linear-by-Linear Association	.806	1	.369
N of Valid Cases	82		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.71.

Chi-Square Tests - 5j by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.295[a]	2	.193
Likelihood Ratio	3.379	2	.185
Linear-by-Linear Association	.033	1	.856
N of Valid Cases	82		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.13.

Chi-Square Tests - 5k by Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.545[a]	2	.170
Likelihood Ratio	4.696	2	.096
Linear-by-Linear Association	2.336	1	.126
N of Valid Cases	82		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.43.

Chi-Square Tests - 5a by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.241[a]	8	.249
Likelihood Ratio	8.159	8	.418
Linear-by-Linear Association	3.175	1	.075
N of Valid Cases	78		

a. 11 cells (73.3%) have expected count less than 5. The minimum expected count is .08.

Chi-Square Tests - 5b by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.618[a]	8	.376
Likelihood Ratio	8.909	8	.350
Linear-by-Linear Association	.072	1	.789
N of Valid Cases	82		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is .20.

Chi-Square Tests - 5c by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.134[a]	8	.420
Likelihood Ratio	8.038	8	.430
Linear-by-Linear Association	.644	1	.422
N of Valid Cases	82		

a. 12 cells (80.0%) have expected count less than 5. The minimum expected count is .01.

Chi-Square Tests - 5d by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.941[a]	8	.083
Likelihood Ratio	13.606	8	.093
Linear-by-Linear Association	1.297	1	.255
N of Valid Cases	82		

a. 11 cells (73.3%) have expected count less than 5. The minimum expected count is .01.

Chi-Square Tests - 5e by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.207[a]	8	.000
Likelihood Ratio	9.398	8	.310
Linear-by-Linear Association	.248	1	.618
N of Valid Cases	82		

a. 12 cells (80.0%) have expected count less than 5. The minimum expected count is .04.

Chi-Square Tests - 5f by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.324[a]	8	.611
Likelihood Ratio	6.195	8	.625
Linear-by-Linear Association	.119	1	.730
N of Valid Cases	82		

a. 11 cells (73.3%) have expected count less than 5. The minimum expected count is .07.

Chi-Square Tests - 5g by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.070[a]	8	.639
Likelihood Ratio	6.174	8	.628
Linear-by-Linear Association	.174	1	.677
N of Valid Cases	82		

a. 10 cells (66.7%) have expected count less than 5. The minimum expected count is .10.

Chi-Square Tests - 5h by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.150[a]	8	.255
Likelihood Ratio	11.186	8	.191
Linear-by-Linear Association	.415	1	.519
N of Valid Cases	82		

a. 11 cells (73.3%) have expected count less than 5. The minimum expected count is .05.

Chi-Square Tests - 5i by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.950[a]	8	.269
Likelihood Ratio	9.502	8	.302
Linear-by-Linear Association	.043	1	.835
N of Valid Cases	82		

a. 10 cells (66.7%) have expected count less than 5. The minimum expected count is .15.

Chi-Square Tests - 5j by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.169[a]	8	.519
Likelihood Ratio	6.730	8	.566
Linear-by-Linear Association	.281	1	.596
N of Valid Cases	82		

a. 10 cells (66.7%) have expected count less than 5. The minimum expected count is .18.

Chi-Square Tests - 5k by Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.381[a]	8	.019
Likelihood Ratio	18.422	8	.018
Linear-by-Linear Association	.303	1	.582
N of Valid Cases	82		

a. 11 cells (73.3%) have expected count less than 5. The minimum expected count is .04.

Chi-Square Tests - 5a by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.698[a]	2	.705
Likelihood Ratio	.709	2	.702
Linear-by-Linear Association	.677	1	.411
N of Valid Cases	78		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.69.

Chi-Square Tests - 5b by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.240[a]	4	.024
Likelihood Ratio	10.733	4	.030
Linear-by-Linear Association	9.385	1	.002
N of Valid Cases	82		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .78.

Chi-Square Tests - 5c by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.316[a]	4	.859
Likelihood Ratio	1.988	4	.738
Linear-by-Linear Association	.122	1	.727
N of Valid Cases	82		

a. 7 cells (77.8%) have expected count less than 5. The minimum expected count is .05.

Chi-Square Tests - 5d by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.037[a]	4	.729
Likelihood Ratio	2.928	4	.570
Linear-by-Linear Association	.591	1	.442
N of Valid Cases	82		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .05.

Chi-Square Tests - 5e by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.911[a]	4	.141
Likelihood Ratio	8.380	4	.079
Linear-by-Linear Association	.260	1	.610
N of Valid Cases	82		

a. 7 cells (77.8%) have expected count less than 5. The minimum expected count is .15.

Chi-Square Tests - 5f by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.945[a]	4	.293
Likelihood Ratio	4.816	4	.307
Linear-by-Linear Association	1.184	1	.277
N of Valid Cases	82		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .29.

Chi-Square Tests - 5g by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.792[a]	4	.044
Likelihood Ratio	6.833	4	.145
Linear-by-Linear Association	3.858	1	.050
N of Valid Cases	82		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .39.

Chi-Square Tests - 5h by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.116[a]	4	.191
Likelihood Ratio	6.597	4	.159
Linear-by-Linear Association	1.997	1	.158
N of Valid Cases	82		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .20.

Chi-Square Tests - 5i by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.949[a]	4	.566
Likelihood Ratio	3.028	4	.553
Linear-by-Linear Association	.267	1	.605
N of Valid Cases	82		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .59.

Chi-Square Tests - 5j by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.432[a]	4	.839
Likelihood Ratio	1.444	4	.837
Linear-by-Linear Association	.014	1	.907
N of Valid Cases	82		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .73.

Chi-Square Tests - 5k by Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.280[a]	4	.082
Likelihood Ratio	7.519	4	.111
Linear-by-Linear Association	.743	1	.389
N of Valid Cases	82		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .15.

VITA

LAURA E. WALKO

PROFESSIONAL EXPERIENCE

2004 - present *National Oceanic and Atmospheric Administration* Communications Specialist

- Office of Habitat Conservation (OHC) communications team lead
  - Create strategic plan for OHC communications, including audience identification and messaging
  - Maintain and advance open communications among division personnel and between OHC and other NOAA Offices
  - Provide schedule briefings to NOAA Fisheries Service leadership about habitat issues
  - Compile annual budget for communications initiatives
  - Facilitate knowledge sharing and collaboration on projects and events
  - Correspondence with constituents
  - Respond to inquiries and requests for publications and other communications materials
  - Maintain Habitat Conservation News Board
- OHC web site development team lead
  - Coordinate with OHC webmaster to update website look across divisions
  - Improve layout of intranet pages to facilitate data sharing
  - Develop multi-phased approaches for expanding internet and intranet capabilities
- Human Dimensions Team Lead
  - Project coordination – environmental stewardship and human dimensions monitoring
  - Develop and implement methodology and survey tools
  - Process results and compile final summary
  - Present findings at the Bi-Annual Restore America's Estuaries conference (Dec 2006)
- NOAA Restoration Center (RC) outreach theme team
  - Project coordination and materials design
  - Materials development: brochures, fact sheets, web-based products, strategic plans, guidance, instruction and training materials
  - Develop system to catalogue and share RC photos, update and maintain photo library, respond to requests for photos
  - Support restoration activities by addressing day-to-day outreach needs for all program areas
- OHC/RC liaison on outreach matters
  - Member of the Habitat Program outreach team
  - Attend and provide briefings at NOAA Habitat Program meetings
  - Develop and maintain successful working relationships with NOAA Communications Coordinators (HQ and field personnel)
  - Prepare briefing materials and talking points for NOAA leadership (all levels)
  - Brief NOAA leadership (all levels)
  - Coordinate response to Congressional inquiries
  - Draft press releases
  - Orchestrate NOAA participation in partner events
  - Coordinate with Legislative Affairs for Congressional representation at partner events
  - Increase the knowledge of and support for habitat restoration with constituencies (NOAA, Federal agencies, Congress, non-government organizations, public)
  - Work closely with other NOAA Communications Coordinators and NOAA Public Affairs Officers

- Support other offices and programs (NOAA Fisheries Service Offices; NOAA Habitat Program; Ecosystem Goal Team)
- Coordinate *Habitat Connections* publication
  - Member of *Habitat Connections* editorial board
  - Communicate with and coordinate submissions from authors
  - Edit contributions as needed
  - Maintain mailing and e-mail distribution lists
  - Coordinate publication printing and mailing

2004 - 2004 *Institute for Defense Analyses* On-call Staff

- Provided logistical support during conferences and events on-site and off-site
- Provided administrative support for various divisions as assigned
- Edited reports and other documentation
- Coordinated with senior editorial staff on publications
- Interacted with personnel at various levels within the Defense community

1998- 2004 *Ecosystem Management & Associates, Inc.* Technical Staff

- Community Involvement and Encroachment Specialist for Naval Air Station Patuxent River's Operational Environmental Planning (OEP) Team (2002-2003)
  - Planned, coordinated, and facilitated all public information exchanges in support of Range Readiness Preservation Initiative (RRPI) including development of associated communications materials; average three exchanges annually
  - Managed community involvement/encroachment issues workgroup
  - Technical writing and editing, report production, including NEPA documentation, management plans, and other environmental documentation
  - Developed, co-wrote, compiled, and edited an Environmental Noise Resource Guide
  - Initiated an annual cross-Department of Defense (DoD) Noise Workshop for installations in the Chesapeake Bay region; Coordinated and co-facilitated workshops; Produced summary reports for the workshops
  - Participated regularly in the DoD Quality Management Board, Chesapeake Bay Region
  - Coordinated one-day team building sessions for both the Acquisition, Planning, and Management Division and the Environmental Department
  - Led and assisted in content development, design, and layout of graphic/visual projects
  - Photo-documented and supported a restoration project on Naval Air Station Patuxent River rangeland
  - General abstract and presentation development
- Special project for US Naval Test Pilot School (2003)
  - Developed quad-fold brochure, CD mailer, and interactive CD catalog
  - Interfaced with local printer during final production of all materials
- Training and facilitation of Consensus Ecological Risk Assessment Workshops (1999-2004)
  - Coordinated pre-planning, including conference calls and materials development
  - Complete event coordination and facilitation support during workshops
  - Wrote, edited, compiled, and distributed summary reports

- Oil Spill Response Memorandum of Agreement Training (2001-2002)
  - Managed & coordinated the development of a training program & interactive CD
  - Interfaced and consulted with six Federal agency representatives
  - Technical writing and editing of associated materials
- Co-authored and edited technical papers, training materials, proposals, and presentations
- Provided event coordination and meeting management for a variety of projects
- EM&A Business Development Associate (1999-2001)

1997-1999 *Thomas Balch Local History and Genealogy Library* Library Aide

- Managed and conserved several collections including photo archive (mainly negatives), map collection, 1812 military rosters, and historic property files
- Assisted patrons with research (walk-in, written, and telephone requests)

1997-1999 *Morven Park* Docent

- Provided historic interpretation during regular season and special events
- Researched history of the family and items in the home

VOLUNTEER EXPERIENCE

2003 Baltimore Aquarium Various locations
- Sea grass restoration projects

2003 Maryland Department of Natural Resources La Plata, MD
- Riparian forest restoration (post-tornado damage)

2002-2003 Conservation and Natural Resources Division Naval Air Station Patuxent River, MD
- Various animal monitoring programs and Growing Native program

1997-1998 Smithsonian Natural History Museum, Naturalist Center Leesburg, VA
- Led educational programs
- Developed educational materials and activities

1997-1998 Loudoun History Museum Leesburg, VA
- Led educational programs
- Participated in historic interpretation and other educational programs

INTERNSHIP EXPERIENCE

2004 American Council on Renewable Energy (ACORE) Washington, DC
- Researched issues and corporations involved in biomass and alternative fuel technologies

1997 James Madison University Life Science Museum Harrisonburg, VA
- Taught classes and developed activities for children using museum specimens

1997 Woodrow Wilson Birthplace and Museum Staunton, VA
- Developed an Integrated Pest Management Plan; Accessioned and de-accessioned items; Assisted in exhibit development

EDUCATION

2003-present	Virginia Polytechnic Institute and State University *MNR, Natural Resources (May 2006 graduation)*	Falls Church, VA
2001-2002	George Mason University *MAIS, Recreation Resource Management (transferred to VT)*	Fairfax, VA
1993-1997	James Madison University *BA, History Biology Minor*	Harrisonburg, VA

OTHER

Red Cross Disaster Relief Training, 2005

- Intro to Disaster Services - Spring 2005
- Mass Care - Spring 2005
- Shelter Operations - Spring 2005
- Family Services Assistance - Spring 2005
- Logistics - Spring 2005
- Damage Assessment I - Spring 2005
- Disaster Health Services - Spring 2005
- Disaster Mental Health Services I - Summer 2005

Memberships/Community Involvement:

- Society for Conservation Biology
- World Vision Child Sponsor (Uganda)

Other:

- Chief of Naval Operations Environmental and Natural Resources Award, Environmental Planning (Team Award), 2002
- Master Watershed Stewardship Program

REFERENCES

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